



Informal Care Networks of Canadian Seniors with Long-Term Health Problems

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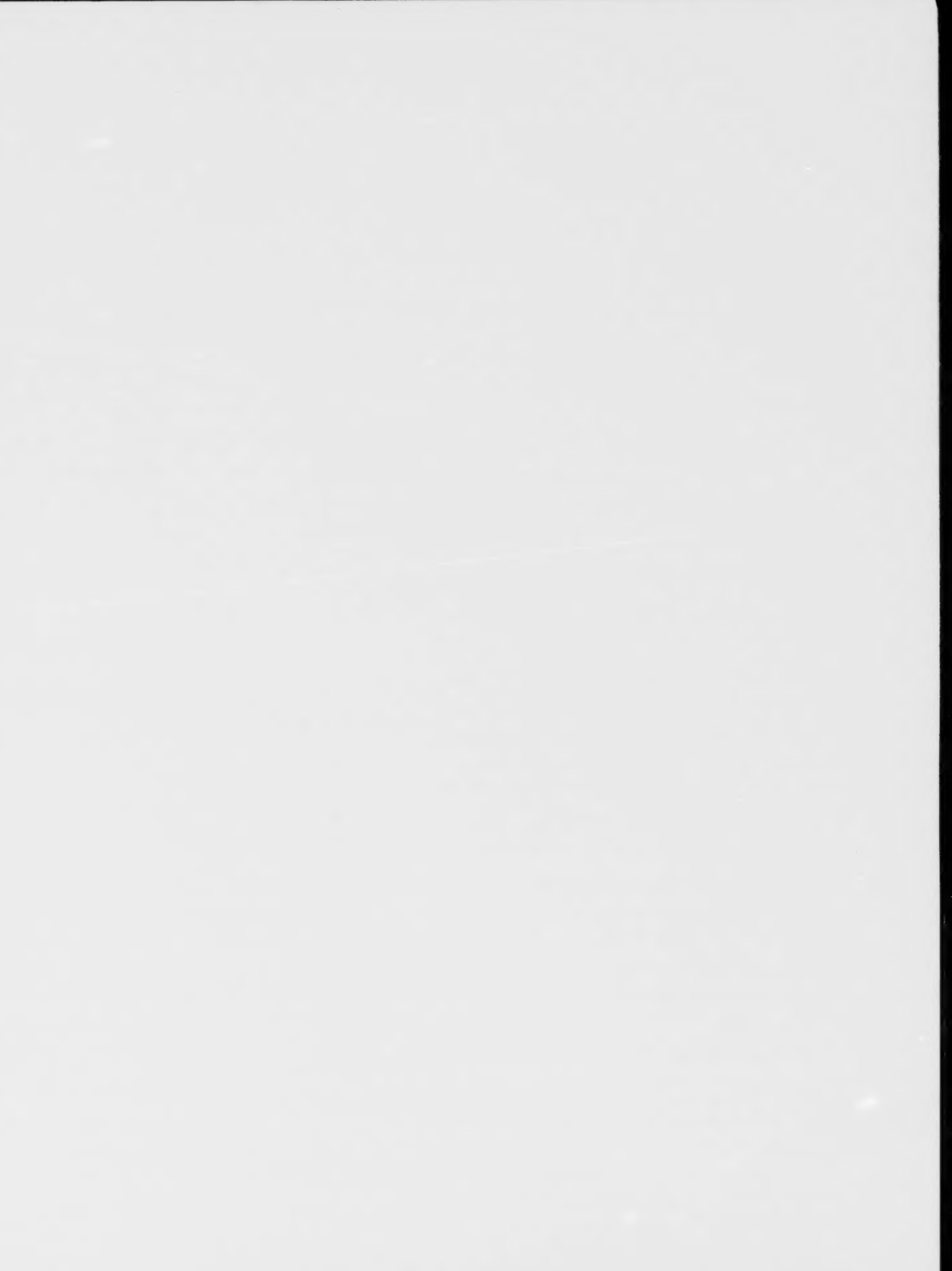
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Informal¹ Care Networks of Canadian Seniors with Long-Term Health Problems

Executive Summary

Throughout the past decade there has been a policy focus on the contributions of family/friend caregivers to the continuing care of frail seniors. Questions about the nature and caring capacity of the family/friend sector formed the basis for this project. There is considerable controversy over these questions. While some believe that there is unused capacity in this sector and that families and friends should pool their resources and do more, others have argued that family/friend caregivers often care alone and are expected to do work that exceeds their personal resources. Unfortunately, we have relatively little evidence to inform the debate. We know a great deal about individual caregivers. Yet knowledge of care *networks* is necessary to understand both the breadth of family/friend caring resources and their need for support.

Data on seniors' care networks were derived from the 1996 Canadian General Social Survey on social support. We utilized the subset of 1,107 respondents aged 65 years or older who received assistance with one or more care tasks² during the previous year from a family member, friend or neighbour because of their own long-term health or physical limitation(s). Networks were counts of all those who provided one or more care tasks to a target senior. Network characteristics were: network size, gender, relationship and age composition, and proximity. Descriptive statistics, multiple and logistic regression, and K-means cluster analyses to derive network typologies were utilized to achieve our objectives. All analyses were weighted to ensure that estimates are representative of the Canadian population.

Objective 1: To clarify conceptual differences among social, support and care networks. The purpose of this element of the project was to develop a common language for terms such as care and care network in order to better understand the needs and capacities of the family/friend care sector.

Fundamental to the question of the caring capacity of the family/friend care sector is an understanding of the ways in which social networks of older people might evolve into care networks when needed. We addressed this objective by undertaking a review and critique of current knowledge of social, support and care networks. Based on this review we argued that these types of networks are distinct. While *social networks* are sets of social ties to others (such as neighbours, friends and family members), *support networks* are subsets of these people who provide emotional and tangible assistance with everyday activities. However, in the face of long-term health problems of older adults, support network members may be called upon to increase the range, amount or intensity of assistance- exhausting the resources of the support network. The subset of support network members that provides this more intense help is the *care network*.

¹ Since beginning this project, we have begun to use the term 'family/friend' caregiver in preference to 'informal' caregiver. 'Informal' has connotations of casual, intermittent or voluntary, which do not reflect the enormity of the job.

² Care tasks include meal preparation or cleanup; housekeeping; shopping; transportation; home maintenance and repair; assistance with banking or bill-paying; personal care; and emotional support or checking-up to make sure the senior is all right.

The work done for this objective provides a basis for our assessment of the caring capacity of the family/friend sector. While having kin and friends is a necessary prerequisite to receiving care, it is not sufficient. Care networks likely are a small core group of the larger social network.

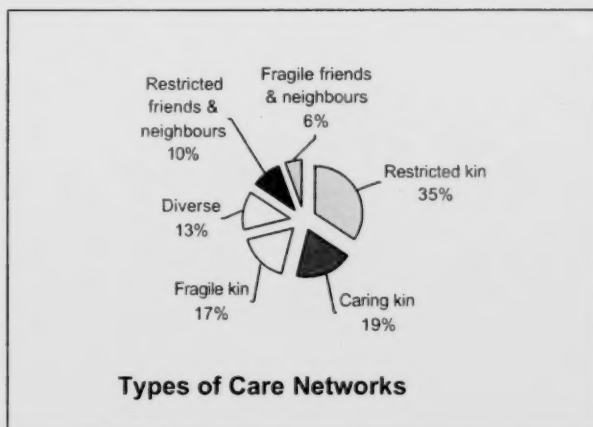
Objective 2. To describe the characteristics of family/friend care networks of Canadian seniors with long-term health problems/disabilities. To address this objective, we studied the caregiving network rather than individuals. We described characteristics of care networks including size, proximity to the cared-for person, gender and kin relationship.

We found that frail seniors' care networks are predominantly small in size, female and kin dominated, mostly young to middle aged, and living in separate households from the care recipient. However, network characteristics also are notable in their variability. While more than 25% have three or more members, 40% have only one, suggesting that many care networks do not have sufficiently large membership to share caring responsibilities. Substantial minorities of networks are entirely men, non-kin, over age 65, and co-resident.

Findings on the relationship between network characteristics and receipt of care showed that size, gender composition and proximity are most important network characteristics. As network size increased, recipients received more hours of care, more care tasks, and had greater odds of receiving each care task. While networks comprising only women received about two hours more care per week than those whose networks were entirely men, mixed gender networks provided the widest range of tasks. Seniors whose entire care network lived in the same household received about 9 more hours of care per week than those with no co-resident caregivers, while those with geographically proximate caregivers received a large number of care tasks.

Objective 3. To develop typologies of care networks of these seniors. The purpose of this objective was to develop evidence concerning the most common types of care networks represented by clusters of network characteristics.

We identified six types of care networks. Three are kin-based (Restricted, Caring, and Fragile), two are non-kin based (Restricted and Fragile) and one is Diverse. The three kin-based networks comprise 71% of all care networks, while 16% of networks are predominantly non-kin. The finding that there are two network types with predominantly non-kin and a third mixed network highlights the importance of friends and neighbours.



Network types differed in size. Most had one or two people, while Diverse networks had 3 to 8 carers. In all network types except Diverse and Restricted Friends & Neighbours, the majority of networks comprised only

women. However, Diverse networks had a mix of women and men, while substantial minorities of Caring Kin and Fragile Kin networks (30% and 38% respectively) comprised only men. Proximity composition also was related to receipt of care. From the perspective of the care recipient, few network members lived more than ½ day away. Further research is needed to determine if there are more distant members who do care management and whose work is invisible to the care recipient because it is not done face-to-face.

Objective 4. To determine consequences to senior recipients of having different types of care networks. A key question in this project was how well frail seniors are served by their care networks. Thus we investigated a number of health and care outcomes for recipients of different types of care networks.

We found that all frail seniors who need care are at some risk of receiving inadequate care—not enough or of the wrong type. We also found that seniors' outcomes differ by network type, leading us to conclude that some network types are likely to be more fragile over the long term than others. Seniors with Diverse, Fragile Kin, and Caring Kin networks received the most hours and types of care. Diverse networks may be robust since they are large, gender balanced, comprise kin and non-kin, and can share the care among more people than other networks. However, only 13% of seniors had this type of care network. Seniors with Fragile Kin networks had the poorest health and were the least happy despite—or perhaps because of—receiving the most hours of care and widest range of tasks. Fragile Kin networks comprise mainly elderly spouses caring alone, who also are aging, and may themselves become (or be) frail. Their care responsibilities also may cause them to become isolated and lonely, making the care network even more fragile.

Seniors with Fragile Non-Kin and Restricted Non-Kin care networks received the least amount of care, and the fewest number of tasks. However, while all seniors in the study reported long-term health problems, seniors with these two network types were the healthiest. The two non-kin network types may also be extremely fragile because they lack the normative obligations to care usually associated with kinship. As seniors in these types of networks become increasingly frail, it is unlikely that the Fragile Non-Kin and the Restricted Non-Kin networks would persevere over the long term.

Policy implications. The assumption made by policymakers that seniors are surrounded by large networks of family, friends, and neighbours who provide care if needed, is not supported by our research. Care network type is strongly related to outcomes such as type and amount of care received, health, and quality of life, suggesting the importance of providing different kinds of supports to seniors depending on their care network type. Policies to support this goal could include:

- ◆ targeting home care policies to enhance sustainability of the variety of care networks.
- ◆ broadening the conditions of the Caregiver Tax Credit to benefit members of care networks, across a wider set of residency/relationship criteria.
- ◆ providing financial support for a finite period or eldercare allowances within the Canada Pension Plan to the 83% of care networks that have employed caregivers if they take a temporary leave of absence from the labor force because of heavy eldercare responsibilities.

Finally, it is important to recognize that some care networks seem better positioned to meet the needs of frail seniors than do others. Networks that provide high levels of care need

particular attention. Policies meant to support caregivers would benefit from an analysis of how public policies are supportive to different care network types.

Réseaux de soins non officiels³ des aînés canadiens ayant des problèmes de santé à long terme

Résumé

Au cours des dernières décennies, la politique s'est penchée sur l'apport aux soins prolongés des aînés de santé fragile de la part de soignants qui sont des parents ou des amis. Ce projet est fondé sur des questions concernant la nature et la capacité de prodiguer des soins du secteur famille/amis. Ces questions soulèvent en effet une vive controverse. Certains sont convaincus que ce secteur renferme une capacité inutilisée et que les familles et les amis devraient réunir leurs ressources et en faire davantage, tandis que d'autres allèguent que les soignants parents/amis fournissent souvent les soins seuls et qu'on s'attend à ce qu'ils exécutent un travail qui dépasse leurs ressources personnelles. Malheureusement, nous possédons relativement peu de données pour éclairer le débat. Nous connaissons bien les soignants individuels mais nous devons également connaître les réseaux de soins pour comprendre l'ampleur des ressources des parents/amis et leur besoin de soutien.

Les données sur les réseaux de soins aux aînés proviennent de l'Enquête sociale générale sur le soutien social de 1996. Nous avons utilisé le sous-groupe de 1 107 répondants de 65 ans et plus qui ont reçu de l'aide pour l'exécution d'au moins une tâche de soin⁴ au cours de la dernière année d'un membre de la famille, d'un ami ou d'un voisin en raison d'une incapacité physique prolongée ou liée à la santé. Les réseaux regroupaient toutes les personnes ayant aidé un aîné cible à exécuter une tâche de soin. Les caractéristiques du réseau étaient les suivantes : taille du réseau, sexe, relation, composition d'âge et proximité. Nous nous sommes servis de statistiques descriptives, de régression multiple et logistique ainsi que d'analyses en classification automatique à K moyennes pour établir les typologies des réseaux afin d'atteindre nos objectifs. Toutes les analyses ont été pondérées afin de s'assurer que les estimations sont représentatives de la population canadienne.

Objectif 1 : Éclaircir les différences conceptuelles entre les réseaux sociaux, les réseaux de soutien et les réseaux de soins. Cet élément du projet avait pour but de développer une langue commune pour les termes tels que soins et réseau de soins afin de mieux comprendre les besoins et les capacités du secteur de soins parents/amis.

Afin d'étudier la capacité de soigner du secteur de soins parents/amis, il est d'abord essentiel de comprendre l'évolution possible des réseaux sociaux des aînés en réseaux de soins au besoin. Nous avons donc entrepris un examen et une évaluation des connaissances actuelles des réseaux sociaux, des réseaux de soutien et des réseaux de soins. En nous fondant sur cet examen, nous avons fait valoir que ces types de réseaux sont distincts. Les *réseaux sociaux* sont des ensembles de liens sociaux avec d'autres (notamment voisins, amis et membres de la famille), les *réseaux de soutien* sont des sous-groupes de ces personnes qui offrent une aide affective et active dans le cadre des activités quotidiennes. Toutefois, face aux problèmes de santé à long terme des adultes

³ Depuis le début de ce projet, nous utilisons le terme soignant parent/ami de préférence à soignant non officiel, qui évoque un caractère intermittent ou volontaire reflétant pas l'énormité de la tâche.

⁴ Les tâches constituant les soins comprennent la préparation des repas et le nettoyage, le ménage, les courses, le transport, l'entretien et les réparations de la maison, l'aide en matière d'opérations bancaires et de paiement des factures, l'hygiène personnelle et le soutien affectif ou les appels/visites pour s'assurer du bien-être de l'aîné.

plus âgés, les membres du réseau de soutien peuvent être appelés à accroître l'étendue, la quantité ou l'intensité de l'aide – et épuiser les ressources du réseau. Le sous-groupe des membres du réseau de soutien qui fournit cette aide plus intense constitue le *réseau de soins*.

Le travail effectué dans le cadre de cet objectif fournit une base pour notre évaluation de la capacité de prodiguer des soins du secteur famille/amis. Il est essentiel d'avoir des parents et des amis pour recevoir des soins mais cela ne suffit pas. Les réseaux de soins sont probablement formés d'un petit groupe central du plus vaste réseau social.

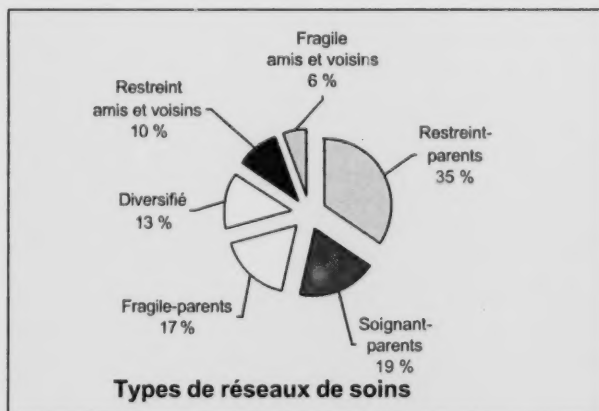
Objectif 2 : Décrire les caractéristiques des réseaux de soins famille/amis des aînés canadiens ayant des problèmes de santé/des incapacités prolongés. Afin d'atteindre cet objectif, nous avons étudié le réseau de soins plutôt que les personnes. Nous en avons décrit les caractéristiques, notamment la taille, la proximité du soigné, le sexe et le lien de parenté.

Nous avons constaté que les réseaux de soins des aînés fragiles sont surtout petits et formés principalement de femmes et de parents, la plupart jeunes à d'âge moyen, et vivant dans des foyers distincts de celui du soigné. La variabilité des caractéristiques du réseau est cependant digne d'être notée. Plus de 25 % comptent trois membres ou plus, 40 % n'en comptent qu'un, ce qui donne à penser que de nombreux réseaux de soins n'ont pas suffisamment de membres pour partager les responsabilités. De grandes minorités des réseaux sont exclusivement formées d'hommes de plus de 65 ans n'ayant aucun lien de parenté avec le soigné et habitant avec lui.

Les résultats de cette relation entre les caractéristiques des réseaux et la réception de soins indiquaient que la taille, la composition des sexes et la proximité sont les caractéristiques les plus importantes. Au fur et à mesure que la taille du réseau augmentait, les soignés bénéficiaient de plus d'heures et de tâches de soins et avaient plus de chance de bénéficier de chaque tâche. Bien que les réseaux comptant seulement des femmes donnaient environ deux heures de plus de soins par semaine que ceux qui ne comptaient que des hommes, les réseaux mixtes offraient la plus vaste gamme de tâches. Les aînés dont tout le réseau vivait dans le même foyer recevaient environ neuf heures de plus de soins par semaine que ceux qui ne vivaient pas avec des soignants, tandis que ceux dont les soignants vivaient à proximité bénéficiaient d'un grand nombre de tâches de soins.

Objectif 3 : Établir les typologies des réseaux de soins des aînés. Cet objectif visait à développer des preuves concernant les types de réseaux de soins les plus courants représentés par des grappes de caractéristiques.

Nous avons identifié six types de réseaux de soins. Trois sont fondés sur les parents (restreint, soignant et fragile), deux ne sont pas fondés sur les parents (restreint et fragile) et un est diversifié. Les trois réseaux fondés sur les parents forment 71 % de tous les réseaux de soins, tandis que 16 % des réseaux sont principalement non-parents. Le fait qu'il existe deux



types de réseaux fondés principalement sur les parents et un troisième réseau mixte souligne l'importance des amis et des voisins.

La taille des types de réseaux variait. La plupart comptait une ou deux personnes, tandis que les réseaux diversifiés comptaient de 3 à 8 soignants. Dans tous les types de réseaux, exception faite de diversifié et restreint amis et voisins, la majorité des réseaux n'étaient formés que de femmes. Cependant, les réseaux diversifiés étaient mixtes et les réseaux soignant-parents et fragile-parents possédaient de fortes minorités (30 % et 38 % respectivement) d'hommes. La composition de la proximité était également liée à la réception des soins. Du point de vue du soigné, peu de membres du réseau habitaient à une plus d'une demi-journée de distance. Il est nécessaire d'effectuer des recherches plus poussées pour déterminer s'il existe des membres plus éloignés qui gèrent les soins et dont le travail est invisible au soigné car il n'est pas exécuté en sa présence.

Objectif 4 : Déterminer les conséquences de différents types de réseaux de soins pour les aînés. L'une des questions clés de ce projet consistait à déterminer à quel point les aînés de santé fragile sont servis par leur réseau de soins. Nous avons donc étudié un certain nombre de résultats sur le plan de la santé et des soins pour les bénéficiaires de divers types de réseaux de soins.

Nous avons constaté que tous les aînés de santé fragile qui ont besoin de soins courent le risque de recevoir des soins inadéquats — insuffisants ou du mauvais type. Nous avons également constaté que les résultats pour les aînés variaient par type de réseau, ce qui nous mène à conclure que certains types de réseaux sont susceptibles d'être plus fragiles que d'autres à long terme. Les aînés profitant des réseaux diversifiés, fragile-parents et soignant-parents recevaient le plus d'heures et de types de soins. Les réseaux diversifiés sont peut-être plus robustes car ils sont importants, équilibrés du point de vue des sexes, comptent des parents et des non-parents et permettent de partager les soins parmi davantage de personnes. Toutefois, seulement 13 % des aînés profitaient d'un tel type de réseau. Les aînés bénéficiant de réseaux fragile-parents étaient en plus mauvaise santé et le moins heureux en dépit du fait — ou peut-être en raison du fait — qu'ils profitaient du plus grand nombre d'heures de soins et de la plus grande diversité de tâches. De tels réseaux sont principalement constitués de conjoints âgés qui s'occupent seuls de l'aîné et deviennent (ou sont) de santé fragile. Leurs responsabilités en matière de soins peuvent également les isoler et leur faire ressentir de la solitude, ce qui rend le réseau encore plus fragile.

Les aînés avec des réseaux de soins fragile non-parent et restreint non-parent bénéficiaient de la moins grande quantité de soins et du moins grand nombre de tâches. Toutefois, tandis que tous les aînés de l'étude déclaraient avoir des problèmes de santé à long terme, ceux avec ces deux types de réseaux étaient les plus en santé. Les deux types de réseaux non-parents peuvent également être extrêmement fragiles car leurs membres n'ont pas les mêmes obligations normatives face aux soins que celles généralement associées aux parents. Au fur et à mesure que la santé des aînés dans ces types de réseaux devient de plus en plus fragile, il est peu probable que les réseaux fragile non-parent et restreint non-parent persévèreraient à long terme.

Répercussions sur les politiques. L'hypothèse des décideurs selon laquelle les aînés sont entourés de vastes réseaux de famille, d'amis et de voisins qui prodiguent des soins au besoin n'est pas validée par notre recherche. Le type de réseau de soins est fortement lié au type et à la quantité de soins reçus, à la santé et à la qualité de vie, ce qui suggère l'importance de fournir différents types de soutien aux aînés selon leur type de réseau de soins. Les politiques appuyant cet objectif pourraient notamment :

- ◆ cibler les politiques sur les soins à domicile afin de rehausser la viabilité de la diversité des réseaux de soins;
- ◆ élargir les conditions du crédit d'impôt aux fournisseurs de soins afin d'en faire profiter les membres des réseaux de soins selon un ensemble de critères de résidence et de relation plus étendus; et
- ◆ offrir un appui financier pendant une certaine période de temps ou une allocation de soins aux aînés dans le cadre du Régime de pensions du Canada à 83 % des réseaux de soins qui emploient des soignants s'ils prennent un congé autorisé temporaire de leur emploi en raison de lourdes responsabilités touchant les soins à des aînés.

Enfin, il est important de reconnaître que certains réseaux de soins semblent être mieux placés que d'autres pour répondre aux besoins des aînés de santé fragile. Les réseaux qui fournissent de hauts niveaux de soins exigent une attention particulière. Les politiques visant à offrir un soutien aux soignants tireraient profit d'une analyse de la façon dont les politiques publiques soutiennent les différents types de réseaux de soins.

Informal Care Networks of Canadian Seniors with Long-Term Health Problems

Introduction

Throughout the past decade there has been a policy focus on the contributions of family/friend caregivers to the continuing care of frail seniors. During that time, the so-called informal sector came to be seen as a 'partner' with the formal care sector and as a key element of the health care system. The recognition of the work of informal caregivers has had both positive and negative outcomes for them. They are now seen as worthy of support such as respite, tax credits, and employment benefits. However, availability of such support is minimal. Further, the press of an aging population and reductions in funding for long term care have resulted in increasing pressure on this now-visible group to do more.

Questions about the nature and caring capacity of the family/friend sector formed the basis for this project. There is considerable controversy over these questions. While some believe that there is unused capacity in this sector and that families and friends should pool their resources and do more, others have argued that most family/friend caregivers often are alone and are expected to do work that exceeds their personal resources. Unfortunately, we have relatively little evidence to inform the debate. We know a great deal about dyads of individual caregivers and their senior recipients. Yet knowledge of care *networks* is necessary to understand both the breadth of family/friend caring resources and their need for support.

Questions such as whether families work together or choose one member to do the caring work, whether friends or neighbours are part of these networks or step in only in the absence of family members, and whether different types of caring networks provide different types and amount of care, are critical to our understanding of what can reasonably be expected of family/friend caregivers. A sole caregiver may have quite different resources and support needs than one who is embedded in a group that shares caregiving responsibilities. As well, senior recipients' quality of life, quality of relationship with caregivers, and physical health may be influenced by the configuration of their family/friend care networks.

The exploration of family/friend care networks is timely for several reasons. First, availability of family/friend support has become a key determinant of access to formal home care and residential care services. Information on how (or whether) caregivers are alone or part of a caregiving group can help practitioners target formal services to seniors and to the set of people who provide care to family and friends. Second, there is a growing number of programs/policies to support family/friend caregivers. These include tax credits, respite programs, and employer-sponsored eldercare leave. Questions such as which members of care networks need support and how support should be apportioned among network members could be informed by the results of this project. Finally, in Canada we have not had large-scale data files that allow for comprehensive analyses of characteristics of social and care networks. The 1996 Statistics Canada General Social Survey on social support provided an opportunity to explore the existence and contributions of groups of caregivers and to generalize to the population of carers of frail seniors in Canada. The refinement of applied methods in analyzing the size, type, and composition of care networks also was an element of this project.

Objectives

There were five objectives to the project:

1. To clarify conceptual differences among social, support and care networks. The purpose of this element of the project was to provide a critical analysis of existing understandings of these constructs and build a conceptual definition of care network so as to have a common language for understanding the needs and capacities of the family/friend care sector.
2. To describe the characteristics of family/friend care networks of Canadian seniors with long-term health problems/disabilities. To address this objective, we moved the unit of analysis from the dyad of caregiver-recipient to the group comprising those who provide care to a target senior and described network characteristics of size, proximity, gender and kin relationship.
3. To develop typologies of care networks of these seniors. The purpose of this objective was to develop evidence concerning the most common types of networks represented by clusters of network characteristics.
4. To determine consequences to senior recipients of having different types of care networks. A key question in this project was how well frail seniors are served by their care networks. Thus we investigated a number of health and care outcomes for recipients of different types of care networks.
5. To investigate the implications of basing policy and practice decisions on care networks. The research necessary to inform this objective was not funded. Thus we cannot provide evidence of policy impact nor undertake systematic policy analysis. Nonetheless, we make general comments on the policy implications of our research in the final section of this report.

Findings are organized in two sections. In section 1, we provide information on background literature, methods, and findings related to each of the first four objectives. In section 2 we discuss the policy implications of the project.

Objective 1. Clarifying Conceptual Differences

The first major task we undertook in this project was to develop increased conceptual clarity around the main construct of 'network' used in this project. The full text of a paper, published in the British journal *Ageing and Society* is appended to this report (Appendix B). In this summary of the paper, we argue that the best way to understand the caring capacity of informal networks of frail seniors is to focus on care networks as the unit of analysis. We clarify conceptual distinctions between social, support, and care networks, and hypothesize how, with transitions from social to support to care, the network becomes smaller with more narrowly defined functions. We conclude that a focus on care networks as distinct from social or support networks will lead to a better understanding of the sustainability of the family/friend sector in the face of increasing demands to provide care to frail older adults.

Fundamental to the question of the caring capacity of the family/friend care sector is an understanding of the ways in which social networks of older people might evolve into care

networks when needed. We draw on research and conceptual development in social and support networks to inform the development of our understanding of the potential of such networks to provide care.

From Social to Support to Care Networks

Social networks are sets of social ties or linkages surrounding individuals, delineated by characteristics including size, composition, density, and geographic dispersion of members (Vogt, Mullooly, Ernst, Pope, & Hollis, 1992). Social networks are believed to provide the vehicle through which support can be delivered (Langford, Bowsher, Maloney, & Lillis, 1997). In contrast, support networks are the actualized potential of social networks (Jennings, 1999; Vogt et al., 1992). The support potential of social networks has been described as network social capital, which is a function of the number of members who are willing to provide support and of the resources that they are able to mobilize when providing support (Tijhuis, Flap, Foets, & Groenewegen, 1998). 'Cashing in' social capital can be seen as actualizing the support potential of the social network (Jennings, 1999). Support networks, then, are functional subsets of social networks that provide emotional and tangible aid and services to older adults (Martire, Schulz, Mittelmark, & Newsom, 1999).

Research to date suggests that we cannot assume that older people who have social ties also will receive support. Seniors' support networks are smaller than their personal social networks, averaging from 5 to 10 members compared to 12 to 13 members in the social network (van Tilburg, 1998). Support networks also appear to be qualitatively different from social networks: more focused on longstanding kin and friend relationships, on relationships with high normative expectations to provide support, on reciprocity, and on overall level of network social capital. In turn, care networks differ from support networks but in ways not often made clear (Wenger, 1996). The conceptual distinction between the two types of networks lies in the circumstances under which tasks are provided. In the face of long-term health problems or impaired functional status of the senior, support network members may be called upon to increase the range or amount of instrumental and emotional support (van Groenou & van Tilburg, 1997). Researchers have argued that support provided under these circumstances differs in type and intensity from what is required in everyday life (Hanson, Östergren, Emståhl, Isacson, & Ranstam, 1997) and that increasing dependency of seniors can exhaust the resources of the support network (Litwin & Auslander, 1990). They believe that when support is provided because of seniors' long-term health problems or functional limitations (Barrett & Lynch, 1999; Keating, Fast, Frederick, Cranswick, & Perrier, 1999), support should be designated as care.

Why is this distinction important? Researchers in both Israel and Wales have shown that older adults who are relatively healthy have more diversified and robust support networks than those with compromised health status (Litwin, 1997; Wenger, 1997). Care networks of frail seniors also have been shown to have higher proportions of close kin and are smaller than those of seniors without chronic health problems (Wenger, 1991). This body of research implies that seniors most in need of functional care networks may be most at risk of not having them.

There is relatively little empirical literature on care networks. However, the dyad literature on informal care to frail seniors, focused on individual caregivers and care recipients, provides some clues as to how support networks become honed to their central core, which are care networks. The main criteria for determining care networks mirror indicators of transitions from social to

support networks: size, network composition and density, normative expectations to provide support, reciprocal relationships, proximity, and characteristics of the senior.

Those with small support networks are at risk of having poor care resources because their care networks likely will be even smaller (Stone & Rosenthal, 1996). Care networks have an average of 3 to 5 members (Tennstedt, McKinlay, & Sullivan, 1989), half the estimated size of seniors' support networks of 5 to 10 members, suggesting that the size of the support network might be a good predictor of the size of the care network. Similarly composition of seniors' support networks provides an indication of care potential. Normative obligations may be especially important in determining care network membership. Research on normative expectations for care suggests that family members are preferred caregivers over friends and neighbours regardless of the nature of the task (Litwin & Auslander, 1990). Some have argued that while friends might be called upon in the absence of kin, they are not expected to provide sustained support in the face of declining health status or impairment of the senior (Stone & Rosenthal, 1996). In contrast, others believe that expectations for care are task- and relationship-specific with spouses expected to provide both emotional and physical tasks, adult children to maintain contact and provide some emotional and instrumental tasks, and siblings and friends to provide mostly emotional support and companionship (Campbell, Connidis, & Davies, 1999). These findings suggest that both kin and non-kin members of support networks may be expected to provide care, but of a different nature depending upon the relationship. They also suggest that, if friends become members of care networks, they are most likely on the periphery. Little is known about whether task specialization means that a diverse care network is better able to meet a broader set of needs of a care recipient.

What is the likely composition of care networks? Among partial care networks such as groups of adult child caregivers, gender composition appears to be an important criterion. When daughters or daughters-in-law are present, they are more likely than sons to take control of the care of the senior (Globerman, 1996). Further, when there are several sisters in a sibling group, help likely will be shared (Connidis, Rosenthal, & McMullin, 1996). In contrast, in brother-only sibling networks, individual brothers are more likely to help their parents independently of one another (Matthews & Heidorn, 1998). These findings are useful in that they illustrate how children of a frail senior might organize themselves to provide care. A next step would be to investigate how other close kin such as spouses work with adult children to provide care.

Changes in reciprocal relationships also lead to the expectation that care networks may be smaller and more family-focussed than support networks. With increased health limitations, older adults may be less likely to engage in reciprocal relationships (Litwin, 1997), thus reducing their ability to maintain or enhance their social capital as a buffer against increasing needs. Some long-term relationships may already have sufficient social capital to provide care even in the face of the senior's inability to reciprocate (Tijhuis et al., 1998). However, if normative expectations for care are exceeded, and if relationships are no longer reciprocal, some support network members may not make the transition to becoming caregivers under circumstances that are more intense and that require long-term involvement. Children and old friends are more likely than neighbours and other non-kin to continue to provide long-term instrumental care even when the reciprocal nature of the relationship becomes unbalanced due to the declining health of the senior (Klein Ikkink & van Tilburg, 1998). In fact, Nocon and Pearson (2000) found that for friends and neighbours, there is a normative boundary between "friendly neighbourliness" and caregiving,

and that resentment may arise when friends or neighbours are pulled across this boundary into caregiving.

Research on individual caregivers shows that proximity makes a difference in types and amount of care provided. Women living with the care recipient provide more hours of care than women at a distance and are more likely to provide meals, transportation, and personal care. Men who co-reside with the care recipient are more likely to provide housekeeping, grocery shopping, and assistance with finances (Keating et al., 1999). Given these findings, it seems likely that those who have networks comprising mostly proximate members may receive the most care. However, little is known about whether most care networks have proximate members, nor whether networks with members both nearby and at a distance will provide a wider set of care tasks.

Finally, characteristics of the senior, such as marital and parental status, age, and proximity to network members, also may influence transitions from support to care networks. If care networks comprise primarily close kin, seniors who are not married or childless may be at risk of having small or non-existent care networks. Some buffering of these limitations in the care network may occur, since such people are more likely to receive help from siblings and friends (Barrett & Lynch, 1999). Overall, seniors who require long-term care rely mostly on proximate kin when they are available (Litwin, 1995). However, those of advanced age may have lost members of their longstanding convoy of friends and same-generation kin. For such older adults, there may be insufficient social capital in their support networks for them to draw on over the course of a lengthy chronic illness.

There is not an extensive body of literature on care networks. However, information reviewed here suggests that close kin, especially children and spouses, may predominate, though the place of friends and neighbours in care networks is not well understood. Care network members may provide different types of tasks depending upon their relationship to the recipient and to each other. Proximate support network members are more likely to provide direct care than those at a distance. Finally, reciprocal relationships with support network members who are not close kin may increase their likelihood of care network membership.

Implications

Further research is needed to develop evidence about the composition, activities, and sustainability of care networks. Such research would provide the basis to address questions about how different configurations of close and extended kin in the social network might evolve into care networks that differ in the type and amount of care provided. The place of non-kin in providing care also is poorly understood and warrants investigation. Questions such as whether neighbours and friends are members of care networks only when close kin form the core, whether non-kin provide a limited range of care tasks, and whether their contributions may become increasingly central with changing family dynamics, have not been addressed in a network context.

Research on transitions from support to care networks could provide information on the place of long-term reciprocity in the development and sustainability of care networks over the long course of a chronic illness. Finally, research on transitions also could address the issue of whether support and care networks can co-exist. That is, while some support network members become caregivers, do others continue to provide the levels of support and types of tasks that

have been part of everyday interactions? Answers to these questions will increase our understanding of how people organize themselves to provide care and their level of resilience in sustaining caregiving activities.

A focus on care networks rather than on individual caregivers could do much to inform health and social policy meant to increase the sustainability of informal care. Current Canadian public policy shows a narrow view of who are deserving members of care networks. For example, only those providing in-home care to a close family member are eligible for tax credits meant to offset out-of-pocket expenses related to caregiving (Canada Customs and Revenue Agency, 2000). Similar criteria are used to evaluate eligibility for respite programs, family responsibility leaves, and other workplace benefits. Non-kin rarely are eligible for these kinds of benefits (Guberman, 1999).

The United Kingdom's 1996 Carers Act seemed a particularly promising vehicle for supporting caregivers of all types. Carers are broadly defined as family, friends, or neighbors who provide regular and substantial help and support to older persons or people with physical disabilities or family members, but who may not necessarily live with the care receiver. The Act encourages assessment of the needs of this broad group of caregivers in order to assist them in continuing to partner with local authorities in providing care. However, while the Carers Act has as its goal the support of "integrated family" networks, benefits are targeted to individual caregivers, thus potentially destabilizing a network by providing support to only one individual in the network (Fruin, 1998).

The social network and social support literature provide an excellent foundation from which to develop further our knowledge of the caring capacity of the informal sector. These bodies of literature also provide a template for moving caregiving research from individual caregivers to care networks. It is time to take up the challenge presented by Wasserman and Galaskiewicz (1994) to consider care networks as "a framework or structure that can be studied and analyzed in its own right" (p. xii).

Objective 2: Describing the Characteristics of Family/Friend Care Networks

The second step in this project was to begin developing our understanding of care networks by describing the characteristics of the care networks of frail Canadian seniors and how these characteristics are related to receipt of care. The full text of a paper, in review with the *Canadian Journal on Aging*, is appended to this report (Appendix B). In this summary of the paper, we present information on the characteristics of care networks and how these characteristics relate to the type and amount of care received by frail Canadian seniors. This analysis highlights the importance of various network characteristics and shows how these characteristics might help us understand where the gaps in care might arise.

Literature Review

Existing literature leads us to believe that care networks will be small (Keating, Kerr, Warren, Grace, & Wertenberger, 1994; Tennstedt et al., 1989), primarily female (Piercy, 1998), predominantly kin (Tijhuis et al., 1998), middle-aged (Keating et al., 1999), and geographically proximate (Connidis, 1994; Litwin, 1995). We also expect that some network characteristics likely will be associated with higher levels of care or with receipt of particular care tasks. For

example, the greater caring capacity of large care networks may result in more care being provided (Penrod, Kane, Kane & Finch, 1995). Similarly, networks comprising higher proportions of women (Peace & Holland, 2001), kin (Pruchno, Burant, & Peters, 1997), older (Gallagher, 1994), and geographically proximate network members (Connidis, 1994; Keating et al., 1999) may provide more care.

Less is known about network characteristics that might be associated with provision of particular tasks. Gender composition likely is important. Seniors may receive help with housekeeping, meal preparation and grocery shopping from networks comprising mostly women (Frederick, 1995), with geographic proximity also contributing to these tasks being provided. Networks comprising mostly men may provide more home maintenance and repair, while the intimate and ongoing nature of personal care may come from networks of mostly close kin (Campbell et al., 1999) and geographically proximate members (Tijhuis et al., 1998).

Methods

Data for this objective were derived from the 1996 Canadian General Social Survey on social support. For this study we utilized the subset of 1,107 respondents aged 65 years or older who received assistance during the previous year from a family member, friend or neighbour because of their own long-term health or physical limitation(s). All analyses were weighted to ensure that estimates are representative of the Canadian population. The family/friend care network was operationalized as the family members, friends and neighbours identified by senior respondents as having provided them with one or more care tasks in the previous year because of that respondent's long-term health or physical limitation. Care tasks included: meal preparation or cleanup; housekeeping; shopping; transportation; home maintenance and repair; assistance with banking or bill-paying; personal care; and emotional support or checking-up to make sure the senior is all right. Network characteristics were: size, gender composition, relationship composition, proximity composition and age composition. For operationalization of network characteristics, hours of care, number of care tasks and control variables, see the Characteristics paper, Appendix B.

Four sets of analyses were performed. Descriptive analyses were used to illustrate network characteristics. To address the question of the relationship of network characteristics to the amount of care received by a senior, we estimated an Ordinary Least Squares (OLS) regression in which the dependent variable was weekly hours of care received by respondents from all care network members. Independent variables were care network characteristics. Control variables were marital status, gender, and health status of the recipient. To address the question of the relationship of network characteristics to the number of care tasks received by the seniors, we performed an additional OLS regression in which number of care tasks received was the dependent variable, and independent and control variables were the same as in the previous regression. Finally, logistic regressions were performed to determine whether network characteristics predicted the likelihood that seniors received a given care task from their network. There were seven dichotomous dependent variables, indicating whether the respondent had received help with a given care task. Independent variables were the same as in the OLS regressions.

Results

Network size ranged from one to eight people with an average and median size of two people. About 43% of seniors had care networks of one person, 31% had two-person networks and about 27% had three or more person networks. Table 1 shows the distribution of other network characteristics. While network composition also was as expected, there was substantial variability. Notable are proportions of networks that are all male, non-kin, over age 65 and living at a distance.

Table 1: Characteristics of care networks

Network Characteristic	Percent of respondents
Gender composition	
Female only network	50.3%
Mixed male and female network	22.1%
Male only network	27.8%
Relationship composition	
Kin-only network	78.3%
Mixed kin and non-kin network	6.6%
Non-kin only network	15.1%
Proximity composition-Household	
Entire network lives in same household as recipient	33.4%
Entire network lives separately from recipient	56.3%
Mixed household/non-household	10.3%
Proximity composition – Distance	
Entire network lives < ½ day from recipient	94.5%
Entire network lives ½ day or more from recipient	1.9%
Mixed – close/distant	3.3%
Age Composition	
Entire network less than 65 years old	69.0%
Mixed – all ages	9.0%
Entire network greater than 65 years old	22.0%

Table 2 on the next page provides a summary of findings on the relationships between network characteristics and hours of care received, number of care tasks received and likelihood of receiving each of seven care tasks. The first network characteristic, network size, was positively related to all care outcomes: hours of care, number of care tasks received and with increased likelihood of receiving each of the seven care tasks. Size of the care network was the strongest predictor of the number of tasks received.

Table 2: Relationships between network characteristics and receipt of care

Network characteristic	Hours of care	# Care tasks	Task type						
			Meals	House-keeping	Home Maintenance	Shopping	Trans - portation	Banking & Bills	Personal care
Size	+	+	+	+	+	+	+	+	+
Gender: % female	+			+	-	+			+
Relationship: % kin		+	+			+	+	+	
Proximity: % same household		+	+	+	+			+	+
% > 1/2 day away							-		
Age: % 45-64			-	-	-		+		
% 65+				-	-	+	+		+

The proportion of women in the care network (gender composition) also was associated with increased hours of care received and with the odds of receiving some care tasks. Seniors whose networks comprised only women received about two hours more care per week than those whose networks were entirely men. The higher the proportion of women in the network, the more likely it was that the recipient would receive help with housekeeping, shopping and personal care, but the less likely the recipient was to receive help with home maintenance.

Relationship composition was associated with receiving more tasks and with the likelihood of receiving some care tasks. Those with all-kin networks were almost four times more likely to receive help with financial management than those with no relatives in their networks. Next to size, proximity composition of the care network was most strongly associated with receipt of care. Seniors whose entire care network lived in the same household received about 9.2 more hours of care per week than those with no co-resident caregivers, while those with geographically proximate caregivers received a large number of care tasks. Noteworthy is the finding that seniors whose entire network lives in the same household as them were more than 13 times more likely to receive help with meal preparation and eight times more likely to receive help with personal care than those with no co-resident network members. Age composition of the network was associated with receipt of some tasks. For example, those with a care network in which all members were over the age of 65 were only 60% as likely to get housekeeping assistance but almost three times more likely to get help with grocery shopping than those with no seniors in their network. Having a network that was entirely over the age of 65 doubled the odds that the senior would receive help with transportation.

In sum, frail seniors' care networks are predominantly small in size, female and kin dominated, mostly young to middle aged, and living in separate households from the care recipient. However, network characteristics also are notable in their variability. While more than 25% have three or more members, 40% have only one, suggesting that many care networks do not have sufficiently large membership to share caring responsibilities. Substantial minorities of networks are entirely men, non-kin, over age 65, and co-resident.

Implications

Size is an influential network characteristic. As network size increased, recipients received more hours of care, a greater numbers of care tasks, and had greater odds of receiving each of the care tasks. Larger networks and co-resident networks appear to have the resources to provide more care over a broad range of tasks. However, the finding that most networks were small and that more than half of care recipients did not have a co-resident network member suggests that there is a risk of overestimating the caring capacity of the informal sector.

While most care networks comprised predominantly kin, these networks did not provide more hours of care. This suggests that we need to rethink the assumption that friends and neighbours will provide less care. As well, while results illustrate the gendered nature of caregiving, they suggest that mixed gender networks may provide the biggest range of tasks. While the probability of receiving some tasks increased with the proportion of women in the care network, the probability of receiving help with others decreased. About 20% of senior recipients had mixed gender networks.

Overall, findings suggest that some network characteristics may place seniors at risk of receiving inadequate care: small size, and high proportions of non-kin, male, and members living at a distance. Care networks in our study comprised mostly kin and women, but they also were small in size and had low proportions of co-resident members. The disadvantages of the latter may offset the advantages of the former depending on how these characteristics combine in care networks. Understanding the combined effect of network characteristics requires the construction of network typologies and examination of how network type influences the variation in amount and type of the care received.

Objective 3: Developing Typologies of Care Networks

The third step in this project was to begin to develop our understanding of care networks by developing care network typologies. In this summary we present information about the sets of characteristics that comprise the six common types of care networks of frail seniors in Canada and discuss how these characteristics might be important in determining the resilience of these networks. Developing care network typologies is important for a number of reasons. Identifying different network configurations may assist in predicting the needs of older people, and their needs for formal services. Care network typologies may provide information about what types of networks are robust, and can sustain care over long term, and perhaps more importantly, which network types are likely to be fragile and put frail older people at risk for receiving inadequate care. Knowledge of care network types could also help policymakers and stakeholders to differentially support the variety of care situations of family/friend caregivers.

Literature Review

A number of authors have developed typologies of support networks. These typologies have similarities and differences in their configuration and activities (Wenger, 1991). However, generally they cluster under five different types. Most authors describe at least one network type that ranges in size but that has a preponderance of kin who are proximate, and who are mostly women. Litwin's (1999) traditional extended family with high proportions of proximate children is one such type, as are Wenger's (1991) family dependent network with its focus on nearby kin ties, and Melkas and Jylhä's (1996) agentic network that has high levels of contact with people outside the household and a large number of children.

A second kin-based network type is very small, often with same-household members, kin focused, both women and men. Mugford and Kendig's (1986) intense network with high proportions of kin and one or two members, and Stone and Rosenthal's (1996) small, friendship poor, socially isolated networks with few members other than children are examples. A third support network type includes both kin and non-kin, distant and nearby members, and is among the largest of support networks. Mugford and Kendig's (1986) complex network with its large size and both close and distant relatives and friends, and Litwin's (1999) diversified network with spouse, children, siblings, and friends are examples. A fourth support network type is typified by high proportions of non-kin, small size, and low supportiveness. Among these types are Wenger's (1991) private restricted network with no local kin, minimal contact with neighbours, no nearby friends, and lack of wider community contacts; and Melkas and Jylhä's

(1996) defective network which is very small, includes a few friends and few neighbours since many recipients are unmarried and childless.

In our conceptual paper we hypothesized that care networks would be smaller, more focused on kin, on relationships with long-term reciprocity, and on proximate members than support networks. Given the paucity of empirical data on care networks, it is difficult to predict with precision the number or configuration of care network types. However, we would expect that most types might be kin-based since non-kin networks might not be able to sustain high levels of assistance required; proximate because of the need for ongoing assistance; and mixed gender because of the variety of care tasks needed.

Methods

In order to segment the sample into care network types we utilized the network characteristics outlined above (network size, gender composition, relationship composition, proximity composition, and age composition) and used K-means cluster analysis to group or cluster those characteristics so as to maximize the homogeneity within the cluster and the differences between clusters. Similar to previous analyses in this project, the senior's care network was all family members and friends identified by the senior respondent as having provided them with at least one care task in the previous year because of that respondent's long-term health or physical limitation.

Results

The analysis resulted in a six cluster solution of typologies of frail seniors' care networks. Three of these six network types are kin-based (Restricted Caring, and Fragile), two are non-kin based (Restricted and Fragile) and one is diverse encompassing both kin and non-kin. The three kin networks comprise 71% of all care networks, while 16% of networks are predominantly non-kin.

Table 3 on the next page provides information on the composition of these networks. The three kin network types are similar in that more than 95% of these networks are entirely kin, about half (55%-59%) are entirely women, and all are small. Importantly, they also differ on key characteristics. Restricted Kin (35% of all networks) provide care from a distance, no members are co-resident, and most members are middle-aged. In contrast, a majority of members of Caring Kin networks (19% of all networks) are co-resident and older than in restricted kin groups. Members of Fragile Kin networks (17% of all networks) also are almost entirely co-resident. However, most also are entirely over age 65 and a substantial minority are all male. These networks are smallest in size, most (89%) having only one member.

The Diverse (mixed kin and non-kin) and the two non-kin network types differ considerably in their composition from kin-dominated networks. None has a majority of co-resident networks. And only one type (Fragile Neighbours and Friends) has a majority of networks that are all women. Diverse networks vary considerably. Only a small proportion is entirely women or entirely one age group. They are by far the largest in size, ranging from two to five members. While 66% are entirely kin, a substantial proportion is mixed kin and non-kin. Approximately 13% of all networks are Diverse.

Table 3: Care network typologies

	Care network type						F-stat = contribution to cluster separation
Network Variables	Restricted Kin	Caring Kin	Fragile Kin	Diverse	Fragile Neighbours & Friends	Restricted Neighbours & Friends	
% women	None = 29.2% ^a All = 59.4%	None = 19.8% All = 55.1%	None = 37.6% All = 54.2%	None = 9.0% All = 13.7%	None = 35.3% All = 64.7%	None = 46.3% All = 45.0%	4.08***
% living with the senior	None	None = 6.0% All = 82.5%	All = 95%	None = 40.3% All = 6.1%	None = 86.3% All = 13.6%	None	1082.42***
% living nearby	None = 2.5% All = 95.2%	None = 90.9% All = 9.1%	Approx. 2%	None = 9.9% All = 27.7%	None = 13.1% All = 85.9%	All	1212.06***
% living > ½ day's travel away	None = 96.8% All = 1.3%	None = 63.1% All = 6.0%	None = 96.0%	None = 85.9% None = 0% All = 66.0%	None = 99.6%	None = 100%	Not in analysis
% kin	All = 97.8%	All= >95%	All=> 95%	None = 68.4% All = 66.0%	None	None = 92.5%	1760.21***
% non-kin	All = <5%	All= <5%	All=<5%	None = 28.0% All = 12.8%	All	All = 90.7% None = 69.2% All = 30.8%	Not in analysis
% < 45 years old	None = 58.0% All = 33.1%	None = 66.6% All = 24.0%	None = 88.5%	None = 38.2% All = 5.0%	None	None = 92.7% None = 56.7% All = 34.4%	Not in analysis
% 45 to 64 years old	None = 48.0% All = 42.1%	None = 24.2% All = 62.3%	None	None = 51.7% All = 0%	All		137.36***
% 65+ years old	None = 90.9% All = 9.1%	None = 95.6%	All = 88.5%	2 = 27.9% 3 = 56.2% 4 = 11.2% 5 = 4.7%	None		348.90***
Network size	1 = 76.1% 2 = 23.9%	1 = 64.3% 2 = 35.6%	1 = 86.1% 2 = 13.9%		1 = 91% 2 = 9%	1 = 80.4% 2 = 19.6%	326.21***
Weighted N =	382	209	190	148	62	113	
% of all care networks	34.6%	18.9%	17.2%	13.4%	5.6%	10.2%	

^a **Interpretation of numbers in the chart:** Looking at Network Type 1, % women in the care network: **None = 29.2%** means that 29.2% of networks in this typology have no women in the care network. **All = 59.4%** means that 59.4% of the care networks in this typology are comprised entirely of women. Percentages in a cell will not sum to 100% because other percentages besides None and All are possible, but were not reported.

The non-kin networks are similar to each other on only one characteristic: fewer than 10% of these networks are entirely kin. They are similar to kin networks in that both are small. Like Restricted Kin, Restricted Neighbours and Friends (10% of all networks) provide care from a distance and do not live with the cared for person. Restricted Neighbours and Friends are distinct in their age distribution with about 31% entirely under age 45 and another 34% entirely over age 65. Like Restricted Kin, network size is small. Fragile Neighbours and Friends networks (6% of all networks) are similar to Restricted Kin networks in being the smallest, with 91% having only one member. All of these networks comprise people who are aged 45-64.

Implications

The differences among network types raise questions about which networks are most likely to meet the care needs of recipients and which are most likely to be sustainable. Fragile Kin and non-kin networks are fragile because they are the smallest networks and have the highest proportion of people who care alone. However they also have additional but distinct features that may make them vulnerable. In the Fragile Kin network, almost all of its members are themselves over the age of 65. As they age, they may become frail, thus putting both partners at risk for institutionalization. Supporting these caregivers has been an ongoing challenge since they use few formal services or services meant to provide respite. Fragile non-kin networks live at a distance from the recipient, are primarily middle-aged adults, and may be primarily women or men. They too likely are caring alone and might benefit from income security provisions that could offset out-of-pocket expenses that are incurred by commuting caregivers.

Restricted Kin networks are somewhat more likely to have two members and thus have some depth to their caring capacity. Their constraints differ somewhat from those in Fragile Kin and non-kin networks. In Restricted Kin networks, members likely are combining caring duties with competing demands of paid employment and their own nuclear families. Among non-kin, middle-aged caregivers unrelated to each other or to the care recipient may have difficulty coordinating and sustaining caregiving over the long term. Both types of networks might benefit from home support to provide cooking and housekeeping to reduce their commuting time and free them to provide emotional support and care management. In these networks that comprise primarily middle-aged members caring from a distance, workplace policies that allow for paid or unpaid caregiving leave could reduce substantially the employment costs of members.

Like Fragile Kin, Caring Kin networks also are likely to be co-resident. However, they are more likely to have multiple members who are middle-aged and that include both women and men. In order to develop informed public policy to support these caregivers, it would be useful to know whether these co-resident caregivers are providing economic support to the household or whether they have left the labour force to provide care. In the first situation, labour policy to protect jobs could be important; in the second, income security in the form of employment insurance might be of most benefit.

The Diverse network appears to be an ideal type of care network. It is large, made up of family, friends and neighbours, and may be quite robust. Due to the mixture of members, it is likely that this network can sustain care over a long period of time, and having both kin and non-kin members may mean that the network can access a wider variety of resources and information. However, Diverse networks also may be low density with loose links among

network members. This network type might benefit most from some professional care management to help them best use and coordinate their resources.

This analysis shows that family, friends, and neighbors do indeed organize themselves differently to provide care to frail seniors. The finding that there are two network types with predominantly non-kin and a third mixed network highlights the importance of friends and neighbours. Further, we now see gender patterns in network membership. Since many networks consist of one person caring alone, many of them comprise only one gender. Women are very clearly carrying the burden of care in most network typologies. In all network types *except* the Diverse type and the Restricted Friend & Neighbour types, the majority of networks comprise only women. However, recognizing that women are disproportionately represented in care networks should not lead us to ignore the presence of men. There are a substantial minority of networks that comprise only men. Finally, it appears that at least from the point of view of the care recipient, there are few network members who live more than 1/2 day away. Further research is needed to determine if there are more distant members who do care management and whose work is invisible to the care recipient because it is not done face-to-face or with their knowledge.

The final step in this project was to examine the types and amount of care provided by different networks and the impact on recipients of the different configurations of membership and tasks. These analyses were intended to help further our understanding of the sustainability of the so-called informal sector and assumptions about the appropriateness of family/friend carers as the main supporters to frail older adults.

Objective 4: Determining Consequences

Our final task in this project was to determine whether the type of care network in which a senior is embedded has consequences for the senior. In this section, we examine the relationship between network type and the amount of care received by the senior each week, the type of care received, and the senior's health and quality of life.

Literature Review

Both the prior literature on social and support networks and our own research to date on care networks that was summarized above, suggest that networks with different sizes and configurations will provide different types and amounts of care (Bowling & Browne, 1991; Campbell et al., 1999; Cicirelli, Coward, & Dwyer, 1992; Connidis, 1994; Fast, Derksen, Keating, & Otfinowski, under review; Frederick, 1995; Gallagher, 1994; Keating et al., 1999; Keating, Otfinowski, Wenger, Fast & Derksen, in press; Klein Ikkink & van Tilburg, 1998; Litwin, 1995; Peace & Holland, 2001; Penrod et al., 1995; Pruchno et al., 1997; Tjhuis et al., 1998). Even in the absence of direct evidence about the relationship between care network type and receipt of care, it is possible to extrapolate earlier findings to hypothesize such a relationship. As was reported above, we found that larger networks and networks comprising mainly close kin and women who live nearby provided more care overall. Similarly, female-dominated networks were found to be more likely to assist with domestic tasks, shopping, and personal care, but less likely to help with home maintenance and repair. Kin-dominated networks were more likely to assist with meals, shopping, transportation, and banking and bill paying.

Those with higher proportions of co-resident network members were more likely to get help with all tasks except shopping and transportation. Consequently, it might be expected that seniors with Diverse and Caring Kin networks might be advantaged with respect to the amount of care received while those with Caring Kin and Fragile Kin networks are likely to get help with a wider range of tasks.

The buffering and health enhancing effects of strong social and support networks have been well documented (Bowling, 1994; Falk et al., 1992; Litwin 1998; Shye et al., 1995; Wenger, 1997). Litwin (2001), for example, reported that social networks, especially his "Diverse" and "Friends" network types, "constituted a significant influence upon the subjective well-being of the elderly respondents" (p. 523) in his study of the social networks of 2,079 elderly Israelis. Being embedded in support and social networks has been shown to be associated with reduced risk of mortality, cardiovascular disease, cancer, functional ability, health status, and institutionalization (Berkman, 1995; Bowling, 1994; Seeman, 1996; Thoits, 1995). Further, membership in bigger networks seems to be associated with reduced risk of mortality for both men and women (Shye et al., 1995). Social ties tend to have an especially strong protective effect for men, and for those with lower levels of functional ability (Unger et al., 1999). There also is evidence that seniors who live by themselves tend to receive less support than other seniors (Litwin & Landau, 2000), although they probably need more support.

The question of whether type of network determines health, or whether a frail seniors' health determines their network type has not been widely investigated. A notable exception is the work of Mor-Barak and Miller (1991) who investigated the causal relationships between social networks and the health of poor, frail elderly. They found that, in the short term, social networks have a positive effect on health. They concluded that the direction of the causal relationship between social network and health was that "social networks significantly affect health of the poor frail elderly and not the other way around" (p. 306). They postulate that this effect is due partly to the tangible aid provided by network members, which results in better care for frail elders. Social and support networks may also provide a buffering effect because network members provide health-related information, assistance in utilizing health care resources, tangible aid, and emotional support. It has also been hypothesized that the support received from a network is an intervening variable between the sociodemographic characteristics of the senior and their health status (Litwin, 1997).

Methods

In this objective, we compared a set of outcomes for senior care recipients across network types. Outcomes examined included: amount of care (hours per week), type of care received (meals, housekeeping, home maintenance, grocery shopping, transportation, banking, and personal care), diversity of care (number of tasks with which help was received), health (measured by the Health Utility Index⁵) and overall happiness with life (measured on a 5 point Likert scale ranging from 1=So unhappy does not want to go on living, to 5=Happy and interested in life).

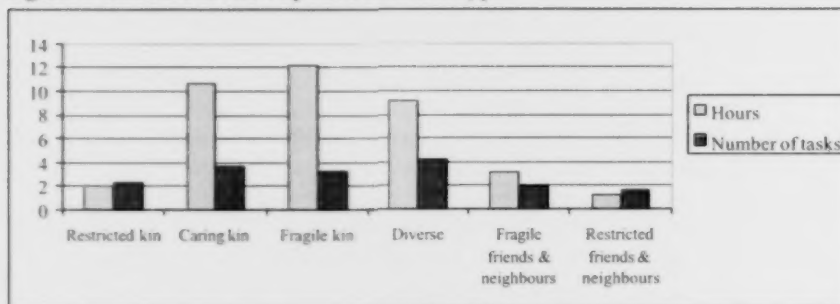
⁵ A composite index of 8 measures of physical and cognitive functioning with a range of values between 0 and 1 in which 1 indicates excellent health.

Analysis of Covariance (ANCOVA) was used to compare the mean hours of care, the number of care tasks received, and overall health and happiness with life. Logistic regressions were used to predict which types of networks were more likely to provide what types of care.

Results

Seniors with Caring Kin, Fragile Kin, and Diverse care networks received the most hours of care and assistance with the most types of tasks (see Figure 1). Those with Diverse care networks also had the highest odds of receiving help with each of the individual types of tasks, with the exception of banking and bill paying, which was more likely to be received by those with Caring Kin networks, and personal care, which those with Fragile Kin networks were more likely to receive.

Figure 1. Amount of care by care network type



Frail seniors with Restricted Non-Kin care networks had the best health while those with Fragile Kin care networks had the poorest health. All senior care recipients reported themselves as being happy, regardless of the type of care network in which they were embedded.

Implications

All frail seniors who need care are at some risk of receiving inadequate care—not enough or of the wrong type. However, seniors' outcomes do differ by network type, leading us to conclude that some network types are likely to be more fragile over the long term than others.

Seniors with Diverse, Fragile Kin, and Caring Kin networks received the most hours and types of care. However, these networks probably differ substantially in their ability to sustain care over the long term. Our evidence suggests that Diverse networks are likely to be very robust and able to sustain care; they are large, comprise kin and non-kin, and can share the care among more people than other networks. However, few seniors (only 13.4%) were fortunate enough to be embedded in this type of network. Seniors with Fragile Kin networks had the poorest health and were the least happy despite—or perhaps because of—receiving the most hours of care and widest range of tasks. Fragile Kin networks comprise mainly elderly spouses caring alone who also are aging, and may themselves become frail. Their care responsibilities also may cause them to become isolated and lonely, making the network even more fragile. We view these networks

as extremely fragile and in need of outside support, despite the high levels of care they provide and despite high normative obligations to provide and sustain care.

Seniors with Fragile Non-Kin and Restricted Non-Kin care networks received the least amount of care, and the fewest number of tasks. However, while all seniors in the study reported long-term health problems, seniors with these two network types were the healthiest. Unfortunately, we could not determine from the available data whether these seniors had non-kin networks that provided little care because they were quite healthy, or if their network type was a causal factor in their health. Nor does the available literature allow us to rule out the possibility that network type may affect the health and well-being of seniors. The two non-kin network types may also be extremely fragile because they lack the normative obligations to care usually associated with kinship. As seniors in these types of networks become increasingly frail, it is unlikely that the Fragile Non-Kin and the Restricted Non-Kin networks would persevere over the long term.

The assumption made by policymakers that seniors are surrounded by large networks of family, friends, and neighbours is not supported by our research. A minority (26%) of seniors have networks ranging in size from three to eight members. That is, about 74% of frail Canadian seniors are being cared for by one or two people, most often close kin. Seniors with all but one care network type (Diverse) are at risk of receiving insufficient care and so may also be at risk of institutionalization.

The "one size fits all" approach to policy and program design also is contra-indicated by our findings. We found that care network type is strongly related to outcomes such as type and amount of care received, health, and quality of life. This points to the importance of providing different kinds of supports to seniors depending on their care network type. Seniors at greatest risk of receiving inadequate care are those whose networks are small and restricted to non-resident children or non-kin.

Policy Implications

The 'rediscovery' of family and friends as a key partner in the provision of continuing care to frail seniors assumes that there is untapped capacity in this sector and belies the fact that family and friends already provide at least 80% of the care to frail seniors in Canada (Patriquin, 1998). Governments have begun to recognize the costs incurred by these caregivers, and consider how to best support their caring work, a recognition that comes, in part, from our collectivist philosophy that together we need to share responsibility for the well-being of our citizens (Clark, 1991). Findings from this project inform our understanding of the breadth and caring capacity of the family/friend sector, and provide evidence on which sound public policies can be developed or adapted from existing policy instruments to sustain the caring work of family and friends. In this section, we discuss the implications for health, social and labour policies of our present understanding of the care networks of Canadian seniors who have long-term health problems.

Current Canadian public policies seem to be based on contradictory understandings of seniors' care networks. Some public programs appear to be based on the assumption that care networks exist. For example, in some jurisdictions, eligibility for home care is based, in part, on the availability and willingness of family and friends to participate in the program (Ontario Ministry of Health and Long Term Care, 1999). In other jurisdictions, eligibility includes an assessment of the risk of informal network collapse (Home Care Nova Scotia, 1997). Such policies assume that clients are embedded in a group of family and friends who can provide care and that home care provides a supplement to the majority of care provided by the family/friend sector. If current recommendations from the Romanow report shift home care programs toward sub-acute care, care networks with small numbers may be unsustainable. Home care policies tailored to the variability in size and capacity of frail seniors' care networks could assist in the allocation of services to best enhance sustainability of the variety of care networks.

In contrast to policies that assume the existence of a family/friend care group, others are predicated on the assumption that there is one key person. For example, personal income tax policies deem that only one individual may claim tax credits or deductions for a given dependent family member. The Caregiver Tax Credit, which is intended to offset the out-of-pocket expenses of caregivers who provide home support to a senior, is available to only one family member who must live with the care recipient, and be a relative but not a spouse. This provision excludes the vast majority of care networks from eligibility. At best, one member of one care network type (Caring Kin) fits the residency and kin relationship criteria. The number of eligible care network members is further reduced if we consider that only those who are employed benefit from non-refundable tax credits. Broadening the conditions of the Caregiver Tax Credit to benefit members of care networks, across a wider set of residency and relationship criteria, would provide some recognition of their immense contributions to the community care of seniors with long term health problems.

In the most recent Speech from the Throne, the Prime Minister pledged that his government will ensure that "Canadians can provide compassionate care for a gravely ill or dying child, parent or spouse without putting their jobs [and income] at risk" (Prime Minister of Canada, 2002). A mechanism being considered to achieve this promise is the Employment Insurance program, which provides temporary financial support to unemployed Canadians who have lost their job through no fault of their own while they actively look for work or upgrade their skills. Eighty-three percent of the care networks have members of employment age. If the regulations

were changed to provide financial support for a finite period to employed caregivers who take a temporary leave of absence from the labor force because of heavy eldercare responsibilities, then members of these care networks may benefit. Similarly, these same care networks would benefit if the Canada Pension Plan made allowances for eldercare that would not result in lowered pension benefits, parallel to child-rearing exemptions. Likewise, the provision of family responsibility leaves in Employment Standards legislation would allow employed care network members time off to care for elders without risking their jobs, benefits and seniority. Few provinces in Canada currently have such family responsibility leave provisions within their employment standards (Eales, Keating & Fast, 2001).

Finally, it is important to recognize that some networks seem better positioned to meet the needs of frail seniors than do others. Diverse networks likely are robust and able to sustain care, but few seniors have such networks. Kin-based networks that provide high levels of care such as Fragile Kin and Caring Kin networks need particular attention. Their heavy care responsibilities may have significant and long lasting economic and non-economic consequences for these often isolated caregivers. Program needs of these networks differ considerably. Fragile Kin networks comprising mostly older, co-resident members, might benefit most from the availability of domestic help to reduce their work loads. Caring Kin networks of younger co-resident adults might be best supported by financial compensation programs to pay them for their caring work, particularly when recipients' care needs are heavy or in communities in which other services are not available. While payment programs to family members have been piloted in Canada (Keefe & Fancey, 1997), none exist currently (Fast & Mayan, 1998).

While these are a few examples of programs intended to support family/friend care networks, a full analysis of how Canadian public policies impact care networks would provide a starting point in the informed development of programs that sustain the variety of care networks of seniors with long term health problems (see Eales, Keating & Fast, 2001; Fast, Eales & Keating, 2001; Keating, Eales & Fast, 2001 for examples of policy impact analyses).

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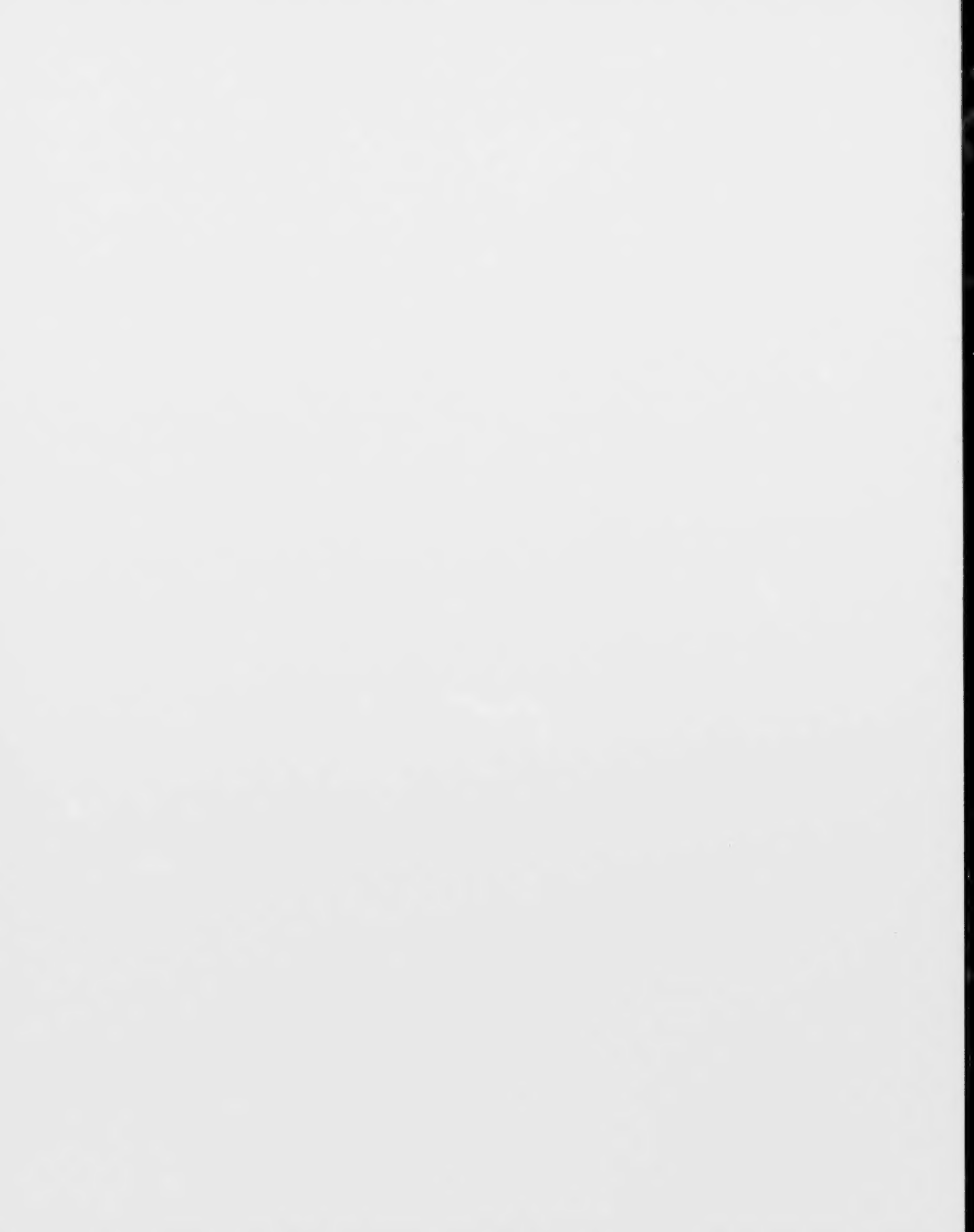
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Appendix A: Conceptual Paper



Understanding the caring capacity of informal networks of frail seniors:

A case for care networks

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Understanding the caring capacity of informal networks of frail seniors:

A case for care networks

Abstract

Population aging and constraints on public sector spending for seniors with long-term health problems have led policy makers to turn to the social networks (the so-called “informal sector”) as a source of long-term care for frail seniors. An important question arising from this policy shift is whether these social networks have the resources to sustain the high levels of care ~~often required by seniors with long-term health problems.~~ In the face of both dire warnings about the imminent demise of the informal sector, and concurrent expectations that it will be the pillar of community long-term care, it seems timely to ~~understand the caring capacity of these networks of frail seniors.~~

In this paper we argue that the best way to understand the caring capacity of informal networks of frail seniors is focus on care networks as the unit of analysis. We clarify conceptual distinctions between social, support, and caregiving networks. We argue that there likely are systematic patterns of transitions from social to support to care networks and that as a result of each transition, the network becomes smaller with more narrowly defined functions. A focus on care networks rather than the usual care dyads will move forward our understanding of the caring capacity of the informal sector and our ability to forge sound social and health policy to support those who provide care.

Key words: caregiving networks, support networks, frail seniors

In recent years, social networks of frail older people have been a topic of particular interest to those charged with the development of health and social policy for seniors. Population aging and constraints on public sector spending for seniors with chronic long-term health problems have lead policy makers in many countries to turn to the social networks of frail seniors, the so-called 'informal sector', as a source of long-term care (Havens, Donovan, & Hollander, 2001). The rationale for this focus is that such care is more responsive than care from the formal sector, since family and friends have a shared history, ongoing relationships, knowledge of the values and preferences of the older adult, and normative obligations to care (Phillipson, 1997).

A question that arises from this policy shift is whether social networks of older adults have sufficient resources to initiate and sustain the long-term care often required by seniors with chronic health problems or other disabilities. Researchers have argued that demographic and social changes have lead to reduced ability of the informal sector to provide care (Boaz & Hu, 1997). Changes in family configurations such as fewer children, higher divorce rates, geographic mobility, and competing demands of employment and other caregiving responsibilities, are presented as evidence that such networks cannot take on increased responsibility for care for frail older members. In his multi-country research on networks of seniors, Litwin (1996, p. 217) concludes that informal support structures are becoming more fragile and argues against the "back-to-the-family" policy of long-term care.

Despite such concerns about reduced caring capacity in the informal sector, a key element of recent health care reform has been sending care home to family and friends (Armstrong, Armstrong, & Fuller, 2000). Formal services to seniors living in the community now are seen as supplementary to the care provided by family and friends who are viewed as the core caregiving sector (Harlton, Keating, & Fast, 1998). At the practice level, home care assessors now evaluate

the potential of a senior's social network to provide long-term care. Indeed, there is evidence that healthcare organizations encourage the assessment of seniors' family ties based on the assumption that the presence of these relationships indicates a capacity to provide care (Fast, Eales, & Keating, 2001; Home Care Development, 1999).

In the face of dire warnings about the imminent demise of the informal sector, and concurrent expectations that it will be the pillar of community long term care, it seems timely to undertake a critical analysis of the caring capacity of the social networks of frail seniors. There are two challenges in addressing this question. The first is that most of the research literature on informal care is based on dyads of seniors and an individual caregiver provider (Boaz & Hu, 1997). Thus there has been little systematic analysis of the ways in which groups of people with social or kin ties to older adults organize themselves to provide care. The second challenge is that there has been relatively little cross-over between the literature on such groups (the social and support networks of older adults) and the literature on informal care. There is a rich body of literature on how social ties provide the resources for instrumental and other support. However, gerontologists have not fully exploited this knowledge toward understanding how family and friends might form networks of carers (Wenger, 1996).

In this paper we argue that the best way to understand the caring capacity of informal networks of frail seniors is focus on care networks as the unit of analysis. We clarify conceptual distinctions between social, support, and caregiving networks. We illustrate how as a result of transitions from social to support to care networks, and show that as a result of each transition, the network becomes smaller with more narrowly defined functions. We conclude that a focus on care networks as distinct from social or support networks will lead to a better understanding of

the sustainability of the informal sector in the face of increasing demands to provide care to frail older adults.

Social, support, and caregiving networks

Fundamental to the question of the caring capacity of the informal sector is an understanding of the ways in which social networks of older people might evolve into caregiving networks when needed. Our purpose here is not to provide a comprehensive review of social and support networks as such work has been undertaken by a number of scholars (see for example, Bowling, Farquhar, & Browner, 1991; Langford, Bowsher, Maloney, & Lillis, 1997). Rather, we draw upon research and conceptual development in social and support networks to inform the development of our understanding of the potential of such networks to provide care. In the next section of the paper we present an analysis of current understanding of the transitions from social to support caregiving networks.

From social to support networks. Social networks are sets of social ties or linkages surrounding individuals, delineated by characteristics including size, composition, density, and geographic dispersion of members (Vogt, Mullooly, Ernst, Pope, & Hollis, 1992). Social networks are believed to provide the vehicle through which support can be delivered (Langford et al., 1997).

In contrast, support networks are the actualized potential of social networks (Jennings, 1999; Vogt et al., 1992). The support potential of social networks has been described as network social capital which is a function of the number of members who are willing to provide support, and of the resources that they are able to mobilize when providing support (Tijhuis, Flap, Foets, & Groenewegen, 1998). 'Cashing in' social capital can be seen as actualizing the support potential of the social network (Jennings, 1999). Support networks are functional subsets of social

networks that provide emotional and tangible aid and services to older adults (Martire et al., 1999).

What is known about the characteristics of social networks that might enhance the transition from social to support networks of older adults? While there has been no explicit focus on the question, research on social and support networks suggests that size of personal social network, social network composition and density including strength and continuity of personal ties, normative expectations to provide support and reciprocal relationships are key criteria. Characteristics of the senior also influence support network membership. Geographic dispersion of members is not emphasized. However, it seems likely that proximity will make a difference since the provision of some type of support requires that network members be nearby.

Despite assumptions that older adults will receive support from their social networks when needed, the size of social networks alone has not been shown to be a good predictor of support. This may be because the support network is not the same as the social network or have not been maintained (van Tilburg, 1998; Walker, Wasserman, & Wellman, 1994), while support is most likely to come from social network members linked by social bonds and ongoing contact (Hibbard et al., 1996). The latter group, known as the personal network, may be a tiny proportion of network ties. Estimates are that while North Americans may have as many as 1500 relationships in their social networks, on average, they have about 20 close personal ties (Walker et al., 1994). Older adults average 12 to 13 close ties (Wenger, 1996). The size of the personal social network rather than the overall social network likely is a better predictor of the size of the support network.

Composition and density of the personal social network have been found to influence support network membership. Personal social networks may include spouses, children, relatives,

neighbours, and friends, the group seen as most likely to provide support (van Tilburg, 1998). In fact, it has been suggested that social networks that include both kin and friends have potential to provide the broadest range of tasks and greatest hours of support (Walker et al., 1994). These networks vary in terms of perceived closeness and importance of particular ties (Israel & Antonucci, 1987). Only members with moderate to high levels of involvement and closely-knit relationships are likely to provide support.

Continuity of relationships is a further indicator of the support potential of social networks. The existence of a 'convoy' of long-standing linked relationships has long been viewed as critical to the emergence of social support (Antonucci & Rejzma, 1991). Key members of the convoys of older adults are believed to be high levels of relatedness, fostered and maintained through longstanding relationships and exchanges of supportive behaviours (van Tilburg, 1998). The innermost convoy is perceived to contain the strongest, closest, and most stable set of social ties. However, while it typically includes immediate kin, the perceived strength of the social tie rather than relatedness determines inclusion (Peek & Lin, 1999).

Normative expectations about the provision of assistance also may influence who becomes a member of the support network. Research on obligations to provide support shows that family ties are more predictive of support than friendship ties, and that seniors prefer to receive support from spouses, before children, other kin, friends, or neighbours (Ajrouch, Antonucci, & Janevic, 2001).

Reciprocity may increase the expectations of support from some social network members (Langford et al., 1997). Reciprocity is seen as particularly important in the maintenance of friendship ties in comparison with kin ties that are based on normative obligations and thus are seen as more stable and reliable in support provision (Peek & Lin, 1999). Thus friends and

neighbours with whom one has longstanding exchange relationships likely will be expected to provide support.

Finally, characteristics of seniors themselves may influence which members of social networks become support network members. Those who are older, unmarried, childless, and in poorer health are least likely to have robust support networks. Support networks of seniors over age 85 are significantly smaller than those of younger seniors, reflecting the age-related loss of same-generation networks members and the propensity to maintain only close relationships (Tijhuis et al., 1998). Seniors who are not married or who have a few or no children are more likely than those who are married to include new kin in their networks. However, findings are equivocal whether unmarried seniors have smaller support networks due to the absence of members with normative obligations (Porter, Ganong, & Armer, 2000) or larger networks due to their motivation to invest in more diverse supportive relationships in the absence of a spouse or children (Baron & Lyndon, 1998). Physically healthier seniors in better health have the most supportive networks (Litwin, 1997).

Research to date suggests that based on these understandings of how social networks evolve into support networks, we cannot assume that older people who have social ties also necessarily will receive support. Seniors' support networks are smaller than their personal social networks (averaging from 5 to 10 members compared to 12 to 13 members of the social network) (van Tilburg, 1998). Support networks also appear to be qualitatively different from social networks: more focussed on longstanding kin and friend relationships, on relationships with high normative expectations to provide support, on reciprocity, and on overall level of network social capital.

In the next section we turn to the question of how robust are support networks in the face of lost social contact, reduced ability to reciprocate, and age-related losses of support network

members, that are characteristic of seniors with long-term health problems. We do this by arguing that *care networks* are distinct from support networks which may be eroded in the light of higher needs of those requiring care.

Distinguishing support networks and care networks of frail seniors. Few researchers distinguish between support and care networks and the terms often are used interchangeably (Wenger, 1996). This conceptual overlap is not surprising since these networks share common features. Notably, both comprise people who provide emotional or instrumental tasks to network members (Martire et al., 1999). Emotional tasks include providing social interaction, reassurance, validation, cheering up and monitoring (Martire et al., 1999). Instrumental tasks are viewed as material or tangible aid (Martire et al., 1999) and include household tasks such as meal preparation, housecleaning, and home maintenance, and errands such as shopping for groceries or other necessities; providing transportation, bill paying and banking (Keating, Fast, Frederick, Cranswick, & Perrier, 1999).

The conceptual distinction between the two types of networks lies in the circumstances under which tasks are provided. In the face of long-term health problems or impaired functional status of the senior, support network members may be called upon to increase the range or amount of instrumental and emotional support (van Groenou & van Tilburg, 1997).

Researchers have argued that support provided under these circumstances differs in type and intensity from what is required in everyday life (Hanson, Östergren, Emståhl, Isacson, & Ranstam, 1997) and that increasing dependency of seniors can exhaust the resources of the support network (Litwin & Auslander, 1990). They believe that when support is provided because of seniors' long-term health problems or functional limitations (Barrett & Lynch, 1999; Keating et al., 1999), support should be designated as care.

Why is this distinction important? Extant research findings suggests that networks supporting seniors with long-term health problems and high levels of need differ in composition and size from those supporting seniors without such problems. For example, researchers in both Israel and Wales have shown that older adults who are relatively healthy have more diversified and robust networks than those with compromised health status (Litwin, 1997; Wenger, 1997). Other findings are that support networks of frail seniors have higher proportions of close kin and are smaller than those without chronic health problems (Wenger, 1991). This body of research implies that those seniors that are most in need of a functional caregiving network may be most at risk for not having one. It further suggests that care networks are not equivalent to support networks, but are functional subsets of them.

From support networks to caregiving networks. There is relatively little empirical literature on caregiving networks. However, the dyad literature on informal care to frail seniors, focused on individual caregivers and care recipients, provides the basis for an exploration of how support networks become honed to their central core-caregiving networks. The main criteria for determining caregiving networks mirror indicators of transitions from social to support networks: size, network composition and density, normative expectations to provide support, reciprocal relationships, proximity, and characteristics of the senior.

Those with small support networks are at risk of having poor care resources because their care networks likely will be even smaller (Stone and Rosenthal, 1996). Care networks have an average of 3 to 5 members (Tennstedt et al., 1989), half the previously described estimates of seniors' support network size of 5 to 10 members, suggesting that size of support network might be a good predictor of the size of the care network.

Composition of seniors' support networks also provides an indication of caregiving potential. Normative obligations may be especially important in determining membership in care networks. Some research on normative expectations for care suggests that expectations are much more focused on family members than are expectations for support. Family members are preferred caregivers over friends and neighbours regardless of the nature of the task (Litwin & Auslander, 1990). While friends might be called upon in the absence of kin they are not expected to provide sustained support in the face of declining health status or impairment of the senior (Stone & Rosenthal, 1996). In contrast, some have argued that expectations for care are task and relationship specific with spouses expected to provide both emotional and physical tasks, adult children expected to maintain contact and provide some emotional and instrumental tasks, and siblings and friends to provide mostly emotional support and companionship (Campbell, Connidis, & David, 1997). These findings suggest that both kin and non-kin contribute to support networks, but of a different nature depending upon the relationship. They also suggest that if friends become members of care networks, they are most likely on the periphery. Little is known about whether task specialization means that a diverse care network is better able to provide for a broader set of needs of a care recipient.

What is the likely composition of care networks? Research on caregiving networks has been primarily on partial caregiving networks of close kin. Among groups of adult-child caregivers, gender composition appears to be an important criterion. When daughters or daughters-in-law are present, they are more likely than sons to take control of the care of the senior (Globerman, 1996). Further, when there are several sisters in a sibling group, help likely will be shared (Connidis, Rosenthal, & McMullin, 1996). In contrast, in brother-only

sibling networks, individual brothers are more likely to help their parents independently of one another (Matthews & Heidorn, 1998). These findings are useful in that they illustrate how children of a frail senior might organize themselves to provide care. A next step would be to investigate how other close kin such as spouses work with adult children to provide care.

Changes in reciprocal relationships also lead to the expectation that care networks may be smaller and more family focussed than support networks. With increased health limitations, older adults may be less likely to engage in reciprocal relationships (Litwin, 1997), thus reducing their ability to maintain or enhance their social capital as a buffer against increasing needs. Some long-term relationships may already have sufficient social capital to provide care even in the face of the senior's inability to reciprocate (Tijhuis et al., 1998). If normative expectations for care are exceeded and if relationships are no longer reciprocal, some network members may not make the transition to becoming caregivers under circumstances that are more intense and that require long-term involvement. Children and old friends are more likely than neighbours and other non-kin to continue provide long-term instrumental care even when the reciprocal nature of the relationship becomes unbalanced due to the declining health of the senior (Klein Ikkink & van Tilburg, 1998). In fact, Nocon and Pearson (2000) found that for friends and neighbours, there is a normative boundary between "friendly neighbourliness" and caregiving. Resentment may arise when friends or neighbours are pulled across this boundary into caregiving.

Research on individual caregivers shows that proximity makes a difference in types and amount of care provided. Women living with the care recipient provide more hours of care than women at a distance and are more likely to provide meals, transportation, and personal care. Men who co-reside with the care recipient are more likely to provide housekeeping,

grocery shopping, and assistance with finances (Keating et al., 1999). Given these findings, it seems likely that those who have networks comprising mostly proximate members may receive most care. However, little is known about whether most care networks have proximate members, nor whether networks with members both nearby and at a distance will provide a wider set of care tasks.

Characteristics of the senior such as marital and parental status, age, and proximity to network members also may influence transitions from support to caregiving networks. If care networks comprise primarily close kin, those who are unmarried or childless may be at risk of having small or non-existent care networks. Some buffering of these limitations in the care network may occur, since such people are more likely to receive help from siblings and friends (Barrett & Lynch, 1999). Overall, seniors who require long-term care rely mostly on proximate kin when they are available (Lowin, 1995). However, those of advanced age may have lost members of their longstanding convoy of friends and same-generation kin. For such older adults, there may be insufficient social capital in their support networks for them to draw on over the course of a lengthy chronic illness.

There is not an extensive body of literature on care networks. However, information reviewed here suggests that close kin, especially children and spouses, may predominate, though the place of friends and neighbours in care networks is not well understood. Care network members may provide different types of tasks depending upon their relationship to the recipient and to each other. Proximate support network members are more likely to provide direct care than those at a distance. Finally, reciprocal relationships with support network members who are not close kin may increase their likelihood of care network membership.

Next steps in research and policy

The question posed at the beginning of this paper was whether social networks of older adults have sufficient resources to provide and sustain care to seniors with chronic health problems. Our review of the literature on social, support and care networks leads us to conclude that this question must be pursued by using networks as the unit of analysis. We further conclude that social, support and care networks are conceptually distinct. Network characteristics including size, composition, density, continuity, normative expectations, proximity, and recipient characteristics likely will lead to smaller, more focused caregiving networks in comparison to the support and social networks from which they emerge.

Further research is needed to determine the composition, activities, and sustainability of caregiving networks. Such research would provide the basis to address questions about how different configurations of close and extended kin in the social network might evolve into care networks that differ in the type and amount of care provided. The place of non-kin social ties in providing care also is poorly understood and warrants investigation. Questions such as whether neighbours and friends are members of caregiving networks only when close kin form the core, whether non-kin provide a limited range of care tasks, and whether their contributions may become increasingly central with changing family dynamics, have not been addressed in a network context.

Research on transitions from support to care networks could provide information on the place of long-term reciprocity in the development and sustainability of care networks over the long course of a chronic illness. Finally, research on transitions also could address the issue of whether support and care networks can co-exist. That is, while some support network members become caregivers, do others continue to provide the levels of support and types of tasks that have been part of everyday interactions? Answers to these questions will increase

our understanding of how people organize themselves to provide care and their level of resilience in sustaining caregiving activities.

A focus on care networks rather than on individual caregivers could do much to inform health and social policy meant to increase the sustainability of informal care. Current Canadian public policy shows a narrow view of who are legitimate members of caregiving networks. For example, only those providing in-home care to a close family member are eligible for tax credits meant to compensate for out-of-pocket expenses related to caregiving (Canada Customs and Revenue Agency, 2000). Similar criteria are used to exclude eligibility for respite programs, family responsibility leaves, and other workplace benefits. Non-kin rarely are eligible for these kinds of benefits (Guberman, 1999).

The UK's 1996 Carers Act seemed a particularly promising vehicle for supporting carers of all types. Carers are broadly defined as family, friends, or neighbors who provide regular and substantial help and support to older persons or people with physical disabilities or family members but that may not necessarily live with the care receiver. The act encourages assessment of the needs of this broad group of carers in order to assist them in continuing to partner with local authorities in providing care. However, while the Carers Act has as its goal the support of "integrated family" networks, benefits are targeted to individual carers, thus potentially destabilizing a network by providing support only to one individual in the network (Fruin, 1998).

The social network and social support literature provide an excellent foundation from which to develop further our knowledge of the caring capacity of the informal sector. These bodies of literature also provide a template for moving caregiving research from individual caregivers to care networks. It is time to take up the challenge presented by Wasserman and Galaskiewicz

(1994) to consider care networks as “a framework or structure that can be studied and analyzed in its own right” (p. xii).

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Appendix B: Characteristics Paper

Characteristics of Informal Care Networks of Frail Seniors

by

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Characteristics of Informal Care Networks of Frail Seniors

Abstract

This paper tests policy assumptions that informal networks of family, friends, and neighbours are able to provide sustained care to frail elderly Canadians. Using national survey data, we examined characteristics of care networks of 1104 seniors living with a long-term health problem. Findings are that networks are predominantly small in size, female and kin dominated, mostly young to middle aged, and living in separate households from care recipients. Network characteristics improved model fit in multivariate analyses of type of task, amount of care, and number of tasks received

Results indicate that there are a number of network characteristics that may place seniors at risk of receiving inadequate care: small size, non-kin, male, and living at a distance. To fully understand the combined effect of network characteristics, future research will focus on the construction of network typologies and examine how network type influences the amount and type of the care received.

Running head: Characteristics of care networks

Keywords: care networks, network analysis, 'informal' care

Characteristics of Informal Care Networks of Frail Seniors

Introduction

Many Western nations are undergoing fundamental changes in the organization of health and continuing care programs. One element of these changes is an emphasis on reduced public sector involvement and increased responsibility for the care of frail seniors by the so-called 'informal sector'¹ of family and friends (Gori, 2000; Havens, Donovan, & Hollander, 2001). This transfer of responsibility for care from the public to the family/friend sector is justified, in part, by a belief that the family/friend sector is an appropriate, available, cost-effective resource in dealing with challenges of population aging (Hawkins, 1996; Keating, Fast, Frederick, Cranswick, & Perrier, 1999; Keating & Fast, 2000; Phillipson, 1997; Velkoff & Lawson, 1998).

Research to date suggests that this assumption may be flawed. Even before the full impact of policy reform in the health and continuing care sectors was felt, it was estimated that the family/friend sector already provided 80 to 90% of care to frail seniors (Denton, 1997). There is mounting evidence as well of substantial economic, health, and social costs experienced by both caregivers and care receivers (Angus, Auer, Cloutier, & Albert, 1995; Fast, Eales, & Keating, 2001; Fruin, 1998; Gori, 2000; National Advisory Council on Aging, 1999). Further, while the language of caring, such as 'caregiving families', 'community care', and 'informal sector' implies that there is a *group* or network providing care, researchers have suggested that most caring is done by a lone individual (Keating, Kerr, Warren. Grace, & Wertenberger, 1994; Walker, 1991).

Together these findings suggest that there may be little capacity in the family/friend sector to respond to escalating demands for more care from family and friends (Keating et al., 1999). An important caveat is that the vast majority of prior research on family/friend care has focused on a single (usually primary) caregiver. Thus there is relatively little information about groups of family and friends who may provide care.

In this paper we move the unit of analysis from individuals to care networks. We examine the nature and composition of care networks and how their characteristics relate to the type and amount of care received by frail Canadian seniors. Focusing on care networks allows for a more thorough examination of whether caregiving responsibilities are distributed across a group of caregivers, and how the nature of that group might affect the adequacy of care (LaPierre, 2001). This focus will, we believe, provide a more comprehensive picture of what care networks of family members and friends are able to provide and hence where the gaps may be.

Review of Literature

While there is a substantial body of literature on family/friend care, previous research has focused primarily on individual caregivers, not on how groups or networks may be organized to provide care (Boaz & Hu, 1997). Similarly, although there is a growing body of research on social and support networks, it does not differentiate consistently among social, support, and care networks, making it difficult to draw inferences about whether or how family/friend networks can be expected to provide long-term care (Keating, Otfinowski, Wenger, Fast, & Derksen, in review; Wenger, 1996). Yet, a critical

analysis of the existing network literature suggests that these networks are distinct. Individuals are embedded within webs of social relationships (the *social* network) (Peek & Lin, 1999) which are said to have the potential to provide support and care (Nolan, Grant, & Keady, 1996). In turn, *support* networks are the actualized potential of social networks that provide emotional and tangible aid (Peek & Lin, 1999). *Care* networks are believed to be a further subset of support networks comprising individuals who provide emotional and instrumental assistance to seniors who need it specifically because of their physical or cognitive limitations (Harlton, Keating, & Fast, 1998; Walker, Pratt, & Eddy, 1995). In the face of shifting government policies emphasizing family/friend care, this limited understanding of how groups or networks of family members and friends might work together to provide care makes it impossible to fully understand whether care networks have the capacity to help seniors maintain their independence over the long term.

In the absence of extant research on care networks, we turn to the literature on primary caregivers, care dyads, and small groups of caregivers such as siblings, non-kin, and adult children, as well as studies of seniors' support networks. From this literature we draw inferences about the characteristics and functions of care networks. The key structural characteristics of networks include size, gender, relationship and age composition, proximity, and density (Siebert, Mutran, & Reitzes, 1999). The literature related to each of these characteristics, and how they might influence the type and amount of care received by frail seniors, is examined in the following sections.

Network size. Existing literature leads us to believe that care networks probably are small. It has been suggested that, even with the network as the unit of analysis, we may

still find care being provided by a lone female caregiver (Keating et al., 1994). At a minimum, care networks likely are smaller than support networks, which, for older adults have been estimated to average from five to ten members (Litwin, 1995; van Tilburg, 1998; Wenger, 1991). One estimate suggests that the care network is about half the size of the support network, ranging from three to five members (Tennstedt, McKinlay, & Sullivan, 1989).

Care network size is of interest because it may influence the amount of care provided. There is some evidence that larger care networks provide more hours of care to seniors (Penrod, Kane, Kane, & Finch, 1995). Little is known about whether network size influences the type or mix of care tasks provided, although one might expect that larger networks would be capable of providing a greater diversity of care tasks. If some care tasks are more critical to the well-being of a senior than others, smaller networks might give priority to those tasks, leaving less critical ones to be done only if there is "spare" capacity.

Gender composition. Much of the literature on individual caregivers suggests that the majority of care network members are women. It is generally agreed that there are greater normative expectations for women to be involved in caregiving activities (Globberman, 1996; Piercy, 1998). However, we also know that approximately 40% of caregivers are men (Keating et al., 1999; Klein Ikkink & van Tilburg, 1998). Little is known about the proportion of women and men in care networks.

There is evidence that women provide more hours of care than do men (Klein Ikkink & van Tilburg, 1998; Peace & Holland, 2001; Pruchno, Burant, & Peters, 1997), so one would expect seniors with female-dominated care networks to receive more care than

those with networks comprising mostly men. Reinforcing this conclusion is Hirsch's (1996) observation that men are more likely to purchase than to provide services to meet their normative caregiving obligations.

It also is widely accepted that some tasks, such as housekeeping, personal care, and emotional support, are stereotyped as "female," while others, such as home maintenance and repair, are stereotyped as more appropriately "male" (Frederick, 1995; Keating et al., 1999). Thus it is likely that the gender composition of the network will affect the types of care tasks the senior receives. Mixed gender networks may provide the broadest range of care tasks.

Relationship composition. It has been suggested that we assist others in part in order to reciprocate for past or present assistance received (Klein Ikkink & van Tilburg, 1998). As a result, one might expect care networks to comprise those individuals with long-standing relationships with the frail senior, who have received support or care from them prior to the onset of health limitations, and who maintain a sense of obligation to reciprocate for past assistance (Ingersoll-Dayton & Antonucci, 1988). These characteristics most likely are found in close kin relationships (Tijhuis, Flap, Foets, & Groenewegen, 1998). Individually, friends and neighbours have been shown to contribute significantly to the care of seniors (Keating et al., 1999), especially in the absence of close kin (Barrett & Lynch, 1999; Jayakody, 1993; Litwak, Messeri, & Silverstein, 1990; Nocon & Pearson, 2000). However, friends and neighbours are not expected to maintain intense care over the long term in the face of declining health status or impairment of the senior (Armstrong & Goldsteen, 1990; Klein Ikkink & van Tilburg, 1998; Nocon & Pearson, 2000; Stone & Rosenthal, 1996).

Since there are greater normative expectations for close kin to provide care (Campbell, Connidis, & Davies, 1999), it seems likely that care networks that comprise mostly kin will provide more hours of care than those comprising mostly non-kin (Pruchno et al., 1997). In contrast, the presence of friends and neighbours in the care network may enable the network to provide a wider range of care tasks. Extended kin and non-kin are unlikely to provide personal care (Cicirelli, Coward, & Dwyer, 1992). Rather, evidence suggests that they will provide mostly emotional support and companionship (Campbell et al., 1999).

Age Composition. There is evidence from the literature on care dyads that all age groups, even children (Penrod et al., 1995), care for the frail elderly. Keating et al. (1999) found that in excess of 65% of individual caregivers are between the ages of 30 and 59. However, substantial proportions also are under 30 (12.5% of women and 18.6% of men) and over 60 (17.7% of women and 16.5% of men). This suggests that people in mid-life likely predominate in care networks, while younger and older family and friends will comprise a substantial minority of care network members.

Age composition of the care network may affect its ability to provide care over the long term. A network with a large proportion of elderly members may be less able to sustain the high demands of long-term caregiving, as over time members may themselves become frail. However, studies have shown that older adults spend more time helping others than younger adults (Gallagher, 1994), suggesting that a relatively older network may provide more care, at least in the short term. Overall, little is known about how age composition might influence types of care tasks provided, although one study found that

networks with older adults are more likely to provide help with transportation (Tennstedt, Crawford, & McKinlay, 1993).

Proximity. Proximity facilitates opportunities for investment in reciprocal relationships and reciprocity is believed to increase the likelihood of care network membership (Tijhuis et al., 1998). Additionally, because many care tasks are "hands-on" and require frequent repetition, they require network members who are nearby (Matthews & Rosner, 1988). It seems likely, therefore, that the majority of care network members will live in close geographic proximity to the senior for whom they are caring (Connidis, 1994; Keating et al., 1999; Litwin, 1995).

The proportion of proximate care network members also may influence the amount of care and type of tasks received by the senior. In their research on eldercare dyads, Keating et al. (1999) found that co-residence with the senior was positively related to hours of care provided by an individual caregiver. It follows, then, that when high proportions of a seniors care networks live in close proximity, they likely receive more care. Nonetheless, while some types of tasks can only be performed by caregivers living nearby, modern communication technology allows other important care tasks, such as emotional support, monitoring, and care management, to be provided from a distance (Armstrong & Kits, 2001). Others, such as household maintenance and yard work, can be done on a seasonal basis by network members who live at a distance. Thus the proportion of the network living in close proximity may affect the types of tasks provided.

Density. Density is a measure of the amount of contact and familiarity that network members have with each other. It is most characteristic of close kin relationships that have endured over the course of a lifetime (Bowling, Farquhar, & Browne, 1991; Israel &

Antonucci, 1987; Wenger, 1994). Since we speculated above that care networks are likely to comprise largely kin, it follows that care networks are likely to be relatively dense.

Densely knit networks are more stable, better able to mobilize care resources (Bowling & Browne, 1991), and to provide higher levels of instrumental care (Wenger, 1994). Furthermore, members of densely knit networks may provide care to the senior as a way of indirectly repaying reciprocal support provided to each other (Tijhuis et al., 1998). However, while dense networks may be able to organize to deliver greater amounts of care, they may have similar stocks of knowledge and other resources and so tend to provide a limited range of care tasks. In contrast, loosely knit networks may only be able to provide direct or instrumental care for short periods of time (Phillipson, 1997) and so tend to provide mostly emotional support (Wenger, 1994). Alternately, because loosely knit networks are more varied in membership and are likely to include non-kin as well as kin members, they may also provide a more diverse set of care tasks than dense networks (Lubben & Girona, 1996; Phillipson, 2001; Wenger, 1994).

In spite of the paucity of direct evidence about the nature of care networks, our analysis of related literature leads us to the following expectations:

1. Care networks will be small and will comprise more female, kin, middle-aged, and geographically proximate members.
2. Seniors will receive more care from larger and denser care networks, and networks comprising higher proportions of women, kin, older, and geographically proximate network members.

3. Seniors will receive more care tasks from networks that are larger, less dense, mixed gender, mixed kin/non-kin, and more geographically proximate.
4. Seniors will be more likely to receive help with housekeeping, meal preparation and grocery shopping from networks comprising mostly female, geographically proximate and younger members; they will be more likely to receive home maintenance and repair tasks from networks comprising mostly men; and they will be more likely to receive personal care from networks comprising mostly close kin and geographically proximate members.

Methods

Data

Data for this study are derived from the 1996 Canadian General Social Survey (GSS) Cycle 11, which had social and community support as its core content. Random digit dialing was used to survey a representative sample of all non-institutionalized Canadians aged 15 years or older in all provinces. People over age 65 were over-sampled. Interviews were conducted by telephone between February and December 1996, with a response rate of 85.3% resulting in 12,756 completed surveys. For this study we utilize the subset of 1,104 respondents aged 65 years or older who received assistance during the previous year from a family member, friend, or neighbour because of the senior respondent's long-term health or physical limitation(s). All analyses were weighted to ensure that estimates are representative of the Canadian population.

Analyses and Operationalization of Variables

Analyses used to test each of the hypotheses stated above, and operational definitions of variables entered in each of the analyses, follow.

Network characteristics To address the question of the characteristics of care networks, we present a description of care network characteristics: size, gender composition, kin/non-kin composition, age composition, and proximity². The family/friend care network comprises all those individuals identified by senior respondents as having provided them with one or more care tasks in the previous year because of that respondent's health or physical limitation lasting or expected to last more than six months. Care tasks included: meal preparation or cleanup; housekeeping; shopping or transportation; household maintenance or repair; assistance with banking or bill paying; personal care; and emotional support or checking-up.

Network size was operationalized in two ways. Size of the "full" care network was measured as the total number of family members and friends who performed any of the above care tasks for the senior recipient. However, for those individuals who provided only emotional support or checking up, we know only the number of individuals who provided these tasks. Information about the gender, relationship, age, proximity, and time spent performing the individual care tasks is available only for those network members who did at least one of the instrumental tasks. Because of this data limitation, all analyses other than size of the network were conducted with a "reduced" care network comprising family members and friends who provided the senior with at least one of the care tasks listed above, excluding emotional support or checking up.

Gender composition was measured as the proportion of women in the network. Relationship composition was operationalized as the proportion of the network made up of kin. Kin included spouses (including same-sex partners and common-law), children, all extended family such as aunts, uncles, cousins, nieces, and nephews, grandchildren and all relatives through marriage (in-laws). Age composition was operationalized as the proportion of the care network under 45 years of age, the proportion between the ages of 45 and 64, and the proportion of the network over age 65. Proximity was operationalized as the proportion of the network residing in the same household as the senior respondent; proportion of the care network residing near to the senior respondent (in the same building, neighbourhood, community, or surrounding area), and the proportion living further away (more than a half day's travel by car).

Network characteristics as predictors of amount of care. To address the question of whether network characteristics were related to the total amount of care received by a senior, we estimated an Ordinary Least Squares (OLS) regression in which the dependent variable was hours of care per week received by respondents from all members of their care networks. Independent variables included care network characteristics: network size, proportion of women in the network, proportion of kin in the network, proportion of the network aged 45 to 64, proportion of the network over 65³, proportion of the network living in the same household as the senior recipient, and proportion of the network living at a distance⁴.

Some characteristics of the care recipient have been reported to affect the type and amount of care received. Therefore the respondent's marital status, gender, and overall health status (measured using the Health Utility Index (HUI)⁵) were entered as control

variables in multivariate analyses. One-tailed tests for the significance of individual slopes were conducted. To isolate the unique contribution of network characteristics in the amount of care received, the regression was conducted in two steps: control variables were entered on the first step, and network variables on the second step.

Network characteristics as predictors of number of care tasks received. To address the question of whether network characteristics are related to the number of care tasks received by the seniors, we performed an additional OLS regression. The dependent variable was the number of care tasks received, and the independent variables consisted of the same individual control variables and network characteristics as in the previous regression. This regression was also performed in two steps to isolate the unique contribution of network characteristics.

Network characteristics as predictors of types of care tasks received. Finally, logistic regressions were performed to determine whether network characteristics predicted the likelihood that seniors received a given care task from their network. There were seven dependent variables, one for each of the care tasks described above. Each was operationalized as a dichotomous variable indicating whether the respondent had received help with a given task. Independent variables were the same as in the OLS regressions, and the regressions were conducted in the same two steps to isolate the unique contribution of the network variables to the model.

Results

Network Characteristics

Table 1 shows the distribution of care network sizes among senior care recipients. Full network size ranged from one to eight people. As expected, the average network was small, at two members. When people providing only emotional support and checking up were excluded from the network, the average network size fell to 1.5 members.

Insert Table 1 here

While network composition also was as expected, there was substantial variability (Table 2). About half of care networks comprised only women, but a substantial minority was all men. More than three-quarters of seniors had kin-only networks, although about 15% had entirely non-kin networks. The majority of seniors had networks comprising entirely people under the age of 65, although a substantial minority of care networks comprised only seniors. Almost all senior respondents had their entire network living nearby, but only one-third had their entire network living in the same household.

Insert Table 2 here

Network Characteristics as Predictors of Amount of Care

Proximity, care network size, and gender were significant predictors of the weekly hours of care received by seniors (Table 3). Seniors whose entire care network lived in

the same household received about 9.2 more hours of care per week than seniors who had no network members living with them. For each additional person in the network, the senior received 2.2 more hours of care per week. Seniors whose networks comprised only women received, on average, about 2 hours more care per week than those whose networks were entirely men.

Network characteristics strongly influenced the amount of care received. The full model explained 23.6% of the variance in amount of care received, but network characteristic variables alone explained 14.6% of the variance.

Insert Table 3 here

Network Characteristics as Predictors of Numbers of Care Tasks Received

When network characteristics and control variables were regressed on the total number of tasks received by frail seniors from their care networks, size of the care network was the strongest predictor of the number of tasks received ($\beta = .398$) (Table 4). For each additional person in the care network, the senior received almost one additional type of task. The next strongest predictor was co-residence with care network member(s). Seniors whose whole network resided with them received, on average, about 1.4 more tasks than those with no co-resident caregivers. Seniors with all-kin networks received about 0.6 more tasks than their counterparts whose networks were entirely non-kin.

Insert Table 4 here

Network Characteristics as Predictors of Types of Care Tasks Received

As Table 5 illustrates, network characteristics also added substantially to the explanatory power of all of the logistic regression models predicting the probability of receiving a particular care task. The models fit moderately well, ranging from 18.9% explained variance (Nagelkerke R^2) for the transportation model, to 41.2% for meal preparation.

Logistic regression results are interpreted somewhat differently than OLS regression results. The odds ratios reported in Table 5 are interpreted as the relationship between the independent variable and the probability that the respondent received assistance with the task. An odds ratio of 1 indicates that the chance of receiving the task is not influenced by the independent variable. Odds ratios greater than 1 indicate that as the value of the independent variable increases, so does the probability of receiving the task. Odds ratios less than 1 indicate that as the value of the independent variable increases, the probability of receiving the task decrease.

Meal preparation. Seniors whose entire network lived with them, who had larger networks, and whose networks were all kin were more likely to receive help with meal preparation. Those with networks with a higher proportion of people aged 45-64 were less likely than those with networks of a younger age composition to receive help with meal preparation. Of particular note is the finding that seniors whose entire network lives in the same household as them are more than 13 times more likely to receive help with meal preparation than those with no co-resident network members. Network size also has

a substantial effect: for each additional network member the probability of receiving help with meal preparation triples.

Housekeeping. Seniors whose care network included higher proportions of co-resident members and women, and larger networks were more likely to receive help with housekeeping. Those with a higher percentage of network members between the ages of 45 and 64, and over the age of 65, were less likely to receive assistance with housekeeping. Co-residence was particularly important. Seniors whose entire network resided with them were six times more likely to receive assistance with housekeeping tasks than those with no co-resident network members. In contrast, those with a care network in which all members were over the age of 65 were only 60% as likely to get housekeeping assistance as those whose entire network was under age 65.

Household maintenance and repair. Seniors whose care networks included a higher percentage of members who lived a half-day's travel or more away were more likely to receive household maintenance. At the same time, seniors whose entire care network lived with them also were more likely to receive assistance with household maintenance than those with no co-resident members. Seniors with larger networks also were more likely to receive help with indoor and outdoor maintenance. In contrast, the probability of receiving help with maintenance and repair tasks were lower when networks included higher proportion of women, higher proportions of members between the ages of 45 and 64, and higher proportions of network members over age 65. In fact, seniors with all-female networks were only 13% as likely to get help with home repairs as those whose networks were entirely male. Almost as dramatic is the finding that seniors whose entire

network comprised other seniors were only one-quarter as likely to get help with home maintenance as those with no seniors in their networks.

Grocery shopping. The probability that seniors received help with grocery shopping increased as the proportion of members who were over age 65, kin, or female increased. Larger networks also increased the odds of receiving help with shopping. Interestingly, seniors with networks made up entirely of other seniors were almost three times more likely to get help with grocery shopping than those with no seniors in their network.

Transportation Seniors with higher proportions of kin network members, larger networks, higher proportions of network members over 65, or between the ages 45 and 64 were more likely to receive help with transportation. However, when higher proportions of networks lived at a distance, they were less likely to get help with transportation. The effects of relationship composition, age composition, and size of network were of similar magnitude. Having a network that was entirely kin or entirely over the age of 65 doubled the odds that the senior would receive help with transportation. Each additional network member also doubled the odds. In contrast, seniors with networks entirely at a distance were only 25% as likely to get transportation from network members.

Banking and bill paying. Seniors with a higher proportion of kin or co-residential members in their networks, and those with larger networks, were more likely to receive help with banking and bill paying. Kin composition was of particular import: those with all-kin networks were almost four times more likely to receive help with financial management than those with no relatives in their networks.

Personal care. Seniors' odds of receiving personal care from their network increased as the proportion of co-residential, female, and middle-aged (45 to 64) members

increased. Those with larger networks also were more likely to receive personal care. Of particular interest is the finding that seniors whose entire network lived with them were almost eight times more likely to receive personal care than those with no co-resident members. Seniors with networks made up entirely of women also were much more likely (by a factor of 4) to get personal care than those with all male networks.

Discussion

Findings from our analyses of network characteristics indicate that networks are predominantly small in size, female and kin dominated, mostly young to middle aged, and living in separate households from the care recipient. However, network characteristics also are notable in their variability. While more than one quarter of 'full' care networks have three or more members, 40% have only one, suggesting that while some care networks may have sufficiently large membership to share caring responsibilities, many do not. Similarly, substantial minorities of networks are entirely men, non-kin, over age 65, and co-resident.

An important finding is that in all cases, network characteristics improved our ability to predict type of care, amount of care, and number of tasks received. The strong relationship between network characteristics and the amount and type of care received offers insights into how these characteristics might influence the ability of 'informal' networks to provide care that is adequate to meet the needs of the frail seniors.

Network size is one of the most influential of network characteristics. As network size increases, recipients get additional hours of care, more care tasks, and increased odds

of receiving each of the care tasks. Larger networks do appear to have the resources to provide more care over a broad range of tasks. Yet the finding that most networks are small suggests that there is a risk of overestimating the caring capacity of the informal sector. Co-resident networks also provide more hours of care and more types of care tasks, especially with hands-on, everyday tasks such as meal preparation, housekeeping, and personal care. However, more than half of care recipients have no network members living with them. In recent years, community services have emphasized personal care while reducing support for day-to-day tasks such as housekeeping, meal preparation, and home maintenance (Harlton et al., 1998). Thus the majority of seniors without co-resident caregivers may be at increased risk of receiving inadequate amounts of these daily tasks. Further, the importance of network resources of size and proximity are not reflected in current Canadian programs intended to support caregivers. For example, the Caregiver Tax Credit is available to only one closely related co-resident caregiver, leaving other network members and those at a distance without public support for their caring work (Fast et al., 2001).

Data limitations lead us to believe that we need further evidence about the relative importance of both size and co-residence. We know from the differences in the sizes of the "full" and "reduced" care networks that the size of the care network was underestimated in most of our analyses and that the estimated relationship between size and amount and type of care may therefore be attenuated. Further, the consequences of this underestimation may be task-specific. It may well be that tasks such as emotional support and care management, not measured in this study, are undertaken equally by co-

resident and more distant caregivers thus leading to an underestimation of the contributions of non-resident care network members.

Most networks comprised predominantly kin. However, networks including higher proportions of kin did not provide more hours of care suggesting that we need to rethink the assumption that friends and neighbours will provide less care. Our expectation that networks comprising higher proportions of kin would provide more care was based on the assumption that kin networks would be more dense than non-kin networks. The finding that relationship composition did not explain variation in the amount of care received may suggest that relationship is not a good proxy for density. However, prior evidence from social network research, that mixed kin/non-kin social networks provide more hours and a greater range of support tasks (Stephens & Christianson, 1986), suggests that the potential influence of care network relationship composition warrants further investigation in the context of care networks. It may be that mixed-relationship care networks also provide the most comprehensive care.

As expected, the gendered nature of caregiving was supported by our findings about gender composition of care networks. Networks comprising predominantly women provided more hours of care, supporting the long-held assumption that women do the most caring work. We also found that the gendered division of household labour carries over into caring work. The probability of receiving assistance with housekeeping, grocery shopping, and personal care increased with the proportion of women in the care network, while the probability of receiving help with household maintenance and repairs and other outdoor work declined. This suggests that a mixed gender network may be more likely to

provide the full set of care tasks. Just over 20% of senior recipients in this study had such networks.

In sum, our findings suggest that there are a number of network characteristics that may place seniors at risk of receiving inadequate care, including small size, non-kin, male, and living at a distance. The majority of care networks in our study comprised mostly kin and women, but they also were small in size and included low proportions of co-resident members. The disadvantages of the latter may offset the advantages of the former depending on how these characteristics combine in networks. Understanding the combined effect of network characteristics requires the construction of network typologies and examination of how network *type* influences the variation in amount and type of the care received.

Endnotes

¹ The term informal has come to be viewed rather negatively since it has connotations of being casual, unreliable or intermittent. We use the term family/friend care throughout.

² While network density is considered to be an important structural characteristic, at present we lack an empirical measure of this construct.

³ Due to collinearity between the age variables, we entered only the two (% age 45 to 64 and % over 65) into the multivariate analyses.

⁴ Again, due to perfect collinearity between this set of variables, proportion of those in the same household, and the proportion living far away were entered into the multivariate analyses.

⁵ The HUI provides a description of an individual's overall functional health based on eight attributes: vision, hearing, speech, mobility, dexterity, cognition, emotion, and level of pain & discomfort. A numeric value between 0 and 1 is provided for any possible combination of levels of the eight self-reported health attributes. A score of zero indicates extremely poor health, and a score of 1 indicates very good health (Feeny, Furlong, Boyle, & Torrance, 1995).

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Table 1: Size of Full and Reduced Care Networks

Number of people in care network	Percent of full care networks	Percent of reduced care networks
1	42.7%	66.7%
2	30.5%	23.4%
3	15.8%	7.7%
4	7.3%	1.5%
5+	3.7%	0.7%
Total	100.0%	100.0%
N	1104	1104
Mean	2.0	1.5
Median	2	1
Standard Deviation	1.10	0.77

*=p<.05; **=p<.01; ***=p<.001

Table 2: Descriptive Characteristics of Frail Seniors' Care Networks

Network Characteristic	Percent of respondents
Gender composition	
Female only network	50.3%
Mixed male and female network	22.1%
Male only network	27.8%
Relationship composition	
Kin-only network	78.3%
Mixed kin and non-kin network	6.6%
Non-kin only network	15.1%
Age Composition	
Entire network less than 65 years old	69%
Mixed – all ages	9%
Entire network greater than 65 years old	22%
Proximity composition – Household Membership	
Entire network lives in same household as recipient	33.4%
Entire network lives separately from recipient	56.3%
Mixed household/non-household	10.3%
Proximity composition – Distance from Care Recipient	
Entire network lives < ½ day from recipient	94.5%
Entire network lives ½ day or more from recipient	1.9%
Mixed – close/distant	3.3%

=p<.05; **=p<.01; ***=p<.001

Table 3: Predictors of Amount of Care Received from Care Network (Hours per Week)

Model	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
Control Variables			
Married	1.485*	.813	.070
Men	1.094	.805	.049
Overall Health Status	-3.649**	1.507	-.079
Network Variables			
Proportion of kin in care network	-.465	.961	-.016
Proportion of care network living in same household as recipient	9.164***	.862	.401
Proportion of care network living ½ day or more from recipient	.152	2.091	-.015
Proportion of women in care network	1.952**	.786	.079
Proportion of care network 45-64	.152	.855	.007
Proportion of care network 65+	.168	1.017	.007
Size of care network	2.264***	.434	.165
Constant	.010**	1.739	
			Adjusted R²
Model 1 (Control Variables only)			.090
Model 2 (Control + Network Variables)			.236
R ² Change Model 1 to Model 2			.146

*p<.05; **p<.01; ***p<.001

Table 4: Predictors of Number of Tasks Received by Senior from Care Network

Model	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
Control Variables			
Married	-.300**	.129	-.082
Men	-.381**	.128	-.100
Overall Health Status	-1.091***	.239	-.137
Network Variables			
Proportion of kin in care network	.592***	.153	.119
Proportion of care network living in same household as recipient	1.393***	.137	.354
Proportion of care network living ½ day or more away from recipient	-.172	.332	-.015
Proportion of women in care network	.180	.125	.043
Proportion of care network 45-64	.009	.136	.002
Proportion of care network 65+	-.013	.162	-.003
Size of care network	.938***	.069	.398
Constant	1.422***	.276	
			Adjusted R²
Model 1 (Control Variables only)			.071
Model 2 (Control + Network Variables)			.347
R ² Change Model 1 to Model 2			.276

*p<.05; **p<.01; ***p<.001

Table 5. Predictors of Types of Care Tasks Received by Senior from their Care Network

Task	Logistic Regressions: ^a Tasks Received					
	Meal Preparation	House-keeping	House Maintenance	Grocery Shopping	Transportation	Banking & Bill Paying
	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio
Control Variables (Recipient characteristics)						
Married	.572	1.243	1.311	.453	.690	.727
Men	1.081	.522	1.469	.436	.444	.659
Health status	.684	.790	2.293	.374	.486	.100
Network Variables						
Proportion of kin in care network	2.226	.904	.725	2.201	2.371	3.986
Proportion of care network in same household as recipient	13.579	6.144	2.241	1.350	1.045	2.279
Proportion of care network living >1/2 day from recipient	1.656	.870	2.449	.546	.258	.464
Proportion of women in care network	1.435	2.142	.134	1.477	1.079	1.368
Proportion of care network 45-64	.638	.677	.443	1.381	1.707	1.378
Proportion of care network 65+	.665	.593	.263	2.708	1.984	1.262
Care network size	3.226	2.958	1.922	1.734	2.219	1.552
Constant	.026	.090	.553	.549	.313	.261
	Nagelkerke R ²					
Model 1 (Control Variables only)	.058	.027	.028	.099	.064	.122
Model 2 (Control + Network Variables)	.412	.280	.299	.199	.189	.242
R ² Change Model 1 to Model 2	.354	.261	.271	.100	.125	.190

^a Regression coefficients are weighted to represent the proportions of frail seniors in the population

* = p < .05; ** = p < .01; *** = p < .001

Appendix C: Publications and Presentations

Publications and Presentations Resulting from the Care Networks Project

Keating, N., Otfinowski, P., Wenger, G. C., Fast, J., & Derksen, L. (2003). Understanding the caring capacity of informal networks of frail seniors: A case for care networks. *Ageing and Society*, 23(1).

Fast, J., Derksen, L., Keating, N., & Otfinowski, P. (in review). Characteristics of informal care networks of frail seniors. *Canadian Journal on Aging*.

Keating, N., Fast, J., & Research Staff (2002, December). A decade of research on care to older adults. Invited presentation to CIHR "Care for the Caregiver" workshop, Ottawa, ON.

Keating, N., Fast, J., Derksen, L., & Otfinowski, P. (2002, November). Almost all in the family: Types of networks caring for Canada's frail seniors. Presentation at the Gerontological Society of America conference, Boston, MA.

Derksen, L., Fast, J., Keating, N., & Otfinowski, P. (2002, November). Care network type and health and well-being outcomes for frail seniors: Who is at risk? Poster presentation at the Social Determinants of Health conference, Toronto, ON.

Keating, N. (2002, April). The caring capacity of the informal networks of frail seniors. Chaired symposium at the International Forum on Aging, Valencia, Spain.

Fast, J., Derksen, L., Otfinowski, P., & Keating, N. (2002, April). Informal care networks of frail seniors: Size does matter. Paper presented at the International Forum on Aging, Valencia, Spain.

Keating, N., Otfinowski, P., Fast, J., Wenger, G. C., & Derksen, L. (2002, April). Transitions from social to support to caregiving networks: A critical analysis of the caring capacity of networks of frail seniors. Paper presented at the International Forum on Aging, Valencia, Spain.